

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.95 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: Vint Hill Wastewater Treatment Plant
7000 Kennedy Road
Warrenton, VA 20187
SIC Code : 4952 WWTP
Facility Location: 7000 Kennedy Road
Warrenton, VA 20187
County: Fauquier
Facility Contact Name: Troy Willingham
Telephone Number: (540) 349-2500
Facility E-mail Address: twillingham@fcwsa.org
2. Permit No.: VA0020460
Expiration Date of previous permit: April 22, 2014
Other VPDES Permits associated with this facility: VAN010020
Other Permits associated with this facility: None
E2/E3/E4 Status: Not Applicable (NA)
3. Owner Name: Fauquier County Water and Sanitation Authority
Cheryl St Amant
Owner Contact/Title: Associate General Manager
Operations
Telephone Number: (540) 349-2092
Owner E-mail Address: camant@fcwsa.org
4. Application Complete Date: October 8, 2013
Permit Drafted By: Alison Thompson
Date Drafted: April 2, 2014
Draft Permit Reviewed By: Joan Crowther
Date Reviewed: April 16, 2014
Public Comment Period : Start Date: May 21, 2014
End Date: June 20, 2014
5. Receiving Waters Information:
Receiving Stream Name : Kettle Run
Stream Code: KET
Drainage Area at Outfall: 0.5 sq.mi.
River Mile: 14.33
Stream Basin: Potomac
Subbasin: Potomac
Section: 7a
Stream Class: III
Special Standards: g
Waterbody ID: VAN-A19R
7Q10 Low Flow*: 0.0 MGD
7Q10 High Flow*: 0.0 MGD
1Q10 Low Flow*: 0.0 MGD
1Q10 High Flow*: 0.0 MGD
30Q10 Low Flow*: 0.0 MGD
30Q10 High Flow*: 0.0 MGD
Harmonic Mean Flow*: 0.0 MGD
30Q5 Flow*: 0.0 MGD

It is staff's best professional opinion that all critical flows for a receiving stream are zero when the drainage area is less than 5 square miles.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

 X State Water Control Law
 X Clean Water Act
 X VPDES Permit Regulation
 X EPA NPDES Regulation

 X EPA Guidelines
 X Water Quality Standards
 X Other (Occoquan Policy – 9VAC25-410)

7. Licensed Operator Requirements: Class II

8. Reliability Class: Class I

9. Permit Characterization:

<u> </u> Private	<u> </u> Effluent Limited	<u> </u> Possible Interstate Effect
<u> </u> Federal	<u> X </u> Water Quality Limited	<u> </u> Compliance Schedule Required
<u> </u> State	<u> </u> Whole Effluent Toxicity Program Required	<u> </u> Interim Limits in Permit
<u> X </u> POTW	<u> </u> Pretreatment Program Required	<u> </u> Interim Limits in Other Document
<u> X </u> TMDL	<u> X </u> e-DMR Participant	

10. Wastewater Sources and Treatment Description:

The Vint Hill WWTP receives domestic wastewater from the Vint Hill Farms community.

The Vint Hill WWTP process consists of influent flow measurement, screening, grit removal, activated sludge treatment, filtration, effluent flow measurement, UV disinfection and post aeration (cascade) prior to discharge to Kettle Run.

Wastewater flow to the plant is pumped to the headworks via a 16" force main from the New Baltimore Pump Station No. 2. The pump station consists of three submersible pumps, a valve vault and metering vault. Influent flow rate to the plant is measured by an ultrasonic flow meter on the 16" force main.

Influent entering the WWTP passes through the screening facility which contains one mechanically cleaned bar screen and a manually cleaned bar screen. Debris is discharged to a dumpster for disposal. Screened wastewater then flows by gravity to the grit removal system. The grit removal system consists of an aeration unit and grit air lift unit. Grit is discharged to a dumpster for removal.

Screened, dewatered wastewater then flows by gravity to the biological treatment facility which consists of three sequencing batch reactors (SBRs) and DynaSand upflow continuous backwash filters. Each SBR includes a 2.4 HP submersible, non-clog transfer pump located at the bottom of the unit. The transfer pump is used to waste sludge from the system to the aerobic digester. Effluent from the SBRs flows by gravity to the Post Equalization Basin where it is pumped to the upflow, continuous backwash DynaSand filters. The primary purpose of the DynaSand filters is for solids removal. However, chemical feed facilities have been provided upstream of the filters. A Methanol feed facility is utilized to enhance denitrification within the filters. Ferric Chloride feed facility is utilized for the chemical removal of phosphorus; Ferric Chloride is fed both to the SBRs, to the aerobic digesters and to the Post Equalization basin. Phosphoric Acid is utilized to provide orthophosphorous for the denitrification bacteria during periods when the SBR effluent phosphorus concentration is too low for bacterial growth. The facility can also feed liquid sodium hypochlorite to control filamentous growth in the SBRs.

Filtered effluent is then directed to the post aeration facilities which consist of two parallel cascade aerators. Each aerator is approximately three feet wide and consists of 13, one foot tall steps. The discharge end of the cascade aerator is provided with v-notch weirs to provide an equal distribution or split flow to the three UV channels located downstream.

Disinfection is provided using ultraviolet (UV) light. The UV facility consists of three channels with each channel containing two banks or four modules each, with six lamps per module.

Plant effluent is discharged to a 16" force main. An ultrasonic flow meter is located within a separate metering vault downstream of the effluent pump station to measure final effluent flow. The facility discharges to Kettle Run.

Historical Note on Outfall Relocation:

Prior to May 6, 2008, this facility used to discharge to South Run instead of Kettle Run. The relocation of Outfall 001 to Kettle Run was done in conjunction with expansion to 0.6 MGD so that discharge of higher flows in proximity to a public water supply (Lake Manassas) could be avoided. The facility was issued a Certificate to Operate (CTO) for the 0.6 MGD expansion on March 26, 2008, and the subsequent relocation of the discharge location to Kettle Run was completed on May 6, 2008.

The Certificate to Operate (CTO) for the 0.95 MGD facility was issued on November 23, 2010.

See Attachment 1 for a schematic/diagram of the current facility.

TABLE 1 – Outfall Description				
Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic and/or Commercial Wastewater	See Item 10 above.	0.95 MGD	38° 44' 18.1" N 77° 41' 37.1" W
See Attachment 2 for (Catlett, DEQ #195B) topographic map.				

11. Sludge Treatment and Disposal Methods:

Sludge and/or residuals from the Vint Hill WWTP are stabilized in three aerobic digesters. Digested sludge is then dewatered using a belt press and is then transported to either the Fauquier County Landfill for disposal or the Remington WWTP (VA0076805) for eventual land application. Recyc Systems, Incorporated serves as the contractor for Remington WWTP. Recyc Systems does not have dedicated land application sites for the biosolids generated at the Remington WWTP.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge (in watershed VAN-A19R)

TABLE 2	
1aKET012.03	DEQ ambient / special studies station located at the Route 761 Bridge crossing.
1aKET002.06	DEQ ambient water quality monitoring station at the Route 611 Bridge crossing.
VAG406233	PWCPS – Transportation Area (Kettle Run, UT)
VAG406271	Megan Judge Residence (Kettle Run)
VAG406292	Robert Glasgow Residence (Kettle Run, UT)
VAG406333	David Rupp Residence (Kettle Run, UT)
VAG406420	Veronica Gaona Residence (Kettle Run, UT)
VAG406431	Constance Capone Residence (Kettle Run, UT)
VAG406447	Brian Sandberg Residence (Kettle Run, UT)

There are no public water supply intakes located within 5 miles of this discharge.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Ferric Chloride	7,800 gallons	Secondary containment
Sodium Hypochlorite	20 gallons	Inside building
Phosphoric Acid	0 gallons	Not Applicable
Methanol	500 gallons	Inside building

14. Site Inspection:

The last site inspection was performed by Sharon Allen, DEQ-NRO Compliance Inspector, on June 19, 2009 (Attachment 3).

15. Receiving Stream Water Quality and Water Quality Standards:**a. Ambient Water Quality Data**

Outfall 001 discharges to a segment of Kettle Run that is not monitored or assessed. The nearest downstream monitoring station is station 1aKET012.03 on Kettle Run, located at the Route 761 bridge crossing, approximately 2.5 miles downstream of Outfall 001. The following is the water quality summary for this segment of Kettle Run, as taken from the 2012 Integrated Report:

There is one DEQ ambient monitoring station located on this segment of Kettle Run: 1aKET012.03, at Route 761.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Occoquan River watershed. The aquatic life use is considered fully supporting. The fish consumption use was not assessed. The wildlife use is considered fully supporting.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)**TABLE 4 - Information on Downstream 303(d) Impairments and TMDLs**

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<i>Impairment Information in the 2012 Integrated Report</i>							
Kettle Run	Recreation	<i>E. coli</i>	0.6 miles	Occoquan River and Tributary Streams Bacteria 11/15/2006	1.65E+12 cfu/year <i>E. coli</i>	126 cfu/100 ml --- 0.95 MGD	---

At the time the Bacteria TMDL for the Occoquan River and tributary streams was written, Vint Hill Farms WWTP (VA0020460) had a design flow of 0.246 MGD and discharged into South Run. This facility was given a WLA of 4.29E+11 cfu/year *E. coli*. The facility also had plans for expansion to 0.6 MGD, which included moving the discharge from South Run to Kettle Run. In accounting for this scenario in the TMDL, future growth was added to the Kettle Run watershed equivalent to 5x a maximum planned design flow of 0.95 MGD (8.25E+12 cfu/year *E. coli*). In May 2008, Vint Hill Farms WWTP completed their expansion and began discharging to Kettle Run. This facility has now been assigned a WLA of 1.65E+12 cfu/year *E. coli*.

Fish tissue monitoring conducted in South Run in 2001 and 2004 showed concentrations of PCBs in 2 different species of fish (white sucker and yellow bullhead catfish) that would exceed the current water quality criterion based tissue value (TV) of 20 ppb. At the time of the fish tissue collection, the water quality criterion based tissue value for PCBs was 54 ppb. There were no fish tissue samples collected in 2001 and 2004 in South Run that exceeded the previous criterion. Fish tissue monitoring has not been conducted in Kettle Run. In light of the more stringent fish tissue criteria and the change in location of Outfall 001 to Kettle Run, DEQ staff recommends that this facility perform low-level PCB monitoring during the upcoming permit cycle. It is recommended that this facility collect 2 samples, 1 wet and 1 dry, using EPA Method 1668, which is capable of detecting low-

level concentrations for all 209 PCB congeners. PCB data generated using Method 1668 revisions A, B, C are acceptable, however data generated using versions A or C is preferred.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the draft 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 4.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Kettle Run is located within Section 7a of the Potomac River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (Attachment 5) details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The stream and final effluent values used as part of Attachment 5 are as follows:

pH and Temperature for Ammonia Criteria:

The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream.

The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. In cases such as this, 90th percentile effluent pH and temperature data may be used to establish the ammonia criteria. Staff has reviewed the available effluent data provided with the monthly Discharge Monitoring Reports for pH (January 2003-December 2013) and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Therefore, the previously established pH value (7.5 S.U.) will be carried forward as part of this reissuance process. Previously established default temperature values of 25°C for summer (May – November) and 15°C for winter (December – April) will also be carried forward as part of this reissuance process since the facility has not been required to monitor temperature with the current permit. The most recent pH analysis is included with Attachment 5.

Total Hardness for Hardness-Dependent Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's total hardness (expressed as mg/L calcium carbonate) as well as the total hardness of the final effluent.

The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria in Attachment 5 are based on a single effluent monitoring value of 164 mg/L provided with the 2014 application. A copy of the results is found as part of Attachment 5.

Bacteria Criteria:

The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean ¹
Freshwater <i>E. coli</i> (N/100 ml)	126

¹For a minimum of four weekly samples [taken during any calendar month].

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Kettle Run, is located within Section 7a of the Potomac Basin. This section has been designated with a special standard of g.

Special Standard "g" refers to the Occoquan Watershed policy (9VAC25-410). The regulation sets stringent treatment and discharge requirements in order to improve and protect water quality, particularly since the waters are an important water supply for Northern Virginia. The regulation generally prohibits new STPs and only allows minor industrial discharges.

16. **Antidegradation (9VAC25-260-30):**

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the receiving stream critical flows. The critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. **Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:**

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. In this case since the critical flows 7Q10, 30Q10, and 1Q10 have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening:

Effluent data obtained from the permit application including Attachment A results and the Discharge Monitoring Reports (DMRs) from January 2010 through December 2013 has been reviewed and determined to be suitable for evaluation except for some of the dissolved metals. The quantification values used for the following dissolved metals were higher than the Site Specific Target Values (SSTVs) established during the 2009 reissuance: Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, and Silver. The facility reanalyzed these parameters on March 11, 2014. The new results were submitted on April 1, 2014. All parameters were less than quantification except for mercury; the mercury result was 0.766 ng/L (0.00766 ug/L) which is less than the SSTV of 0.46 ug/L which would trigger a limit analysis.

Effluent data from the DMRs was reviewed, and there have been the following exceedances of the established limitations reported on the DMRs: February 2012 – Total Suspended Solids (TSS) and March 2011 – BOD₅ and TSS. The facility was also issued Warning Letters for late submittal of the industrial users survey (May 2010), and for overflows (December 2009 and March 2010).

The following pollutants require a wasteload allocation analysis: Ammonia as N.

b. Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co [Qe + (f) (Qs)] - [(Cs) (f) (Qs)]}{Qe}$$

Where:	WLA	= Wasteload allocation
	Co	= In-stream water quality criteria
	Qe	= Design flow
	Qs	= Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
	f	= Decimal fraction of critical flow
	Cs	= Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10, 30Q10, and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

c. Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff reevaluated pH and temperature and has concluded it is not significantly different than what was used previously to derive ammonia criteria. As a result, staff carried forward the pH and seasonal temperature data to determine new ammonia water quality criteria and new wasteload allocations (WLAs) (Attachment 5). Additionally, DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage (Attachment 2).

During the 2009 reissuance staff reevaluated the difference between summer (May – November) and winter (December – April) WLAs to determine if seasonal ammonia limits were warranted. Because there is a significant difference between the winter and summer WLAs, seasonal ammonia limitations were established in the 2009-2014 reissuance.

9VAC25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow tier. As such, ammonia limitations shall be based on the most stringent of the ammonia limitations, either water quality based or Occoquan Policy based.

An ammonia concentration of 18 mg/L was used to calculate the ammonia loadings for the 0.246 flow tier. The 18 mg/L ammonia value would be equal to what is expected from a secondary treatment system that does not nitrify. Thus, with a flow of 0.246 MGD, multiplied by the concentration of 18 mg/L and a conversion factor of 3.785 kg/day, gives you a loading cap of 16.76 kg/day. Back calculating, you can determine the monthly average effluent limits with this 16.76 kg/day loading cap.

TABLE 5 – Occoquan Policy Ammonia (as N) Limitations	
	0.95 MGD
Monthly Average	4.7 mg/L
Weekly Average	7.0 mg/L

*The weekly average was calculated by multiplying the monthly average by a 1.5 multiplier.

TABLE 6 – Water Quality based Ammonia Limitations (0.95 MGD)		
	May – November	December - April
Monthly Average	2.4 mg/L	4.6 mg/L
Weekly Average	3.2 mg/L	6.2 mg/L

*These limitations were determined utilizing DEQ's Statistical Program (STATS.EXE). The statistical printouts are found in Attachment 6.

With this reissuance the most stringent of the ammonia limitations for the 0.95 MGD flow tiers are water-quality based. As such, the limitations shown in Table 6 are proposed with this reissuance.

2) Metals/Organics:

A review of the results for the metals submitted with the application on October 1, 2013 as well as the updated results submitted on April 1, 2014 demonstrates that no limits are necessary for metals or any of the organic parameters. All results except for mercury were less than quantification. The mercury result was 0.766 ng/L (0.00766 ug/L) which is less than the SSTV of 0.46 ug/L which would trigger a limit analysis; therefore, no further evaluation of mercury is necessary.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

The Occoquan Policy (9VAC25-410) was established to regulate jurisdictional domestic sewage and set forth requirements for high performance regional treatment plants, to protect the Occoquan watershed from point source pollution. The policy establishes effluent quality requirements, as well as administrative and technical requirements for regional sewage treatment plants. The Vint Hill WWTP is not considered a regional, high-performance plant within the Occoquan watershed at this time. As such, the minimum effluent quality requirements for any regional sewage treatment plant in the Occoquan watershed (9VAC25-410-20) do not apply.

1) pH:

No changes to the pH limitations are proposed. pH limitations are set at the water quality criteria.

2) Dissolved Oxygen:

No change to the D.O. limitation is proposed.

3) *E. coli*:

No change to the *E. coli* limitation is proposed. *E. coli* limitations are in accordance with the Water Quality Standards 9VAC25-260-170. The proposed limit of 126 n/100 mL for *E. coli* is in compliance with the approved TMDL.

4) BOD₅:

9VAC25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. As such, the monthly average loading limit of 13 kg/day and the weekly average loading limit of 20 kg/day will be carried forward with this reissuance.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (14 mg/L) or the original weekly average concentration (21 mg/L) by a conversion factor of 3.785.

Monthly AverageWeekly Average

$$(0.246 \text{ MGD})(3.785)(14 \text{ mg/L}) = 13 \text{ kg/d}$$

$$(0.246 \text{ MGD})(3.785)(21 \text{ mg/L}) = 20 \text{ kg/d}$$

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow. The monthly average limit of 3.6 mg/L was rounded to 4 mg/L and the weekly average limit of 5.6 mg/L was rounded to 6 mg/L to reflect agency guidance on whole number BOD limits. The monthly average limit of 4 mg/L the weekly average limit of 6 mg/L will be carried forward with this reissuance.

Monthly AverageWeekly Average

$$\frac{(13 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 3.6 \text{ mg/L}$$

$$\frac{(20 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 5.6 \text{ mg/L}$$

5) Total Suspended Solids (TSS):

9VAC25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow.

Current agency guidance, however, stipulates that limits be reported to two significant figures. In accordance with this guidance, the monthly average loading limit of 18.6 kg/day will be rounded to 19 kg/day and the weekly average loading limit of 27.9 kg/day will rounded to 28 kg/day. It is staff's best professional judgment that the increase in loadings due to rounding is insignificant and the intent of 9VAC25-410-30 (Expansion of existing plants in the Occoquan watershed) is maintained.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (20 mg/L) or the original weekly average concentration (30 mg/L) by a conversion factor of 3.785.

Monthly AverageWeekly Average

$$(0.246 \text{ MGD})(3.785)(20 \text{ mg/L}) = 19 \text{ kg/d}$$

$$(0.246 \text{ MGD})(3.785)(30 \text{ mg/L}) = 28 \text{ kg/d}$$

With the rounding of the monthly average loading limit to 19 kg/day, the monthly average limit of 5.2 mg/L established with the previous issuance changes to 5.3 mg/L. The weekly average limit of 7.8 mg/L will be carried forward with this reissuance as the rounding of the weekly average loading limit to 28 kg/day does not impact the limit.

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow.

Monthly Average

$$\frac{(19 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 5.3 \text{ mg/L}$$

Weekly Average

$$\frac{(28 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 7.8 \text{ mg/L}$$

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN010020. Total Nitrogen Annual Loads and Total Phosphorus Annual Loads from this facility are found in 9VAC25-720 – *Water Quality Management Plan Regulation* which sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e., those with design flows of ≥ 0.5 MGD above the fall line and >0.1 MGD below the fall line.

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820. Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit. The annual averages are based on the technology installed as part of the WQIF grant funding Contract #440-S-08-12 (Attachment 7). The concentration limits are included in this permit. Loading limits will be governed by the general permit mentioned above.

For the 0.95 MGD flow, an annual average Total Phosphorus concentration limit of 0.30 mg/L TP annual average is needed based on 9VAC40-70.A(4). The limits are based in part on point source grant and operation and maintenance agreement contract #440-S-08-12.

The Total Nitrogen (TN) annual average concentration limit for the 0.95 MGD flow was revised to 4.0 mg/L in June 2013 by the State Water Control Board when they approved the regulatory amendment to 9VAC25-720-50.C amending the TN waste load allocation for the Vint Hill WWTP. The regulatory amendment was based on design flow certified for operation on December 31, 2010 and a 4.0 mg/L TN concentration.

Occoquan Policy Requirements for Total Phosphorus:

9VAC25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. The Total Phosphorus monthly average loading limit of 2.3 kg/day and the weekly average loading limit of 3.5 kg/day that were established under previous permits were converted to lb/day to be consistent with current DEQ guidance.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (2.5 mg/L) or the original weekly average concentration (3.8 mg/L) by a conversion factor of 8.3438.

<u>Monthly Average</u>		<u>Weekly Average</u>	
$(0.246 \text{ MGD})(8.345)(2.5 \text{ mg/L})$	=	$(0.246 \text{ MGD})(8.345)(3.8 \text{ mg/L})$	=
		5.1 lb/day	
		7.8 lb/day	

0.95 MGD Flow Tier:

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 8.345 and dividing in to the loading cap established for the 0.246 MGD flow. With the conversion of kg/day to lb/day, the monthly average limit of 0.60 mg/L established with the previous issuance changes to 0.64 mg/L and the weekly average limit of 1.0 mg/L established with the previous reissuance changes to 0.98 mg/L. Current agency guidance, however, stipulates that limits be reported to two significant figures. In accordance with this guidance, the monthly average limit of 0.60 mg/L and the weekly average limit of 1.0 mg/L shall be carried forward.

<u>Monthly Average</u>		<u>Weekly Average</u>
$\frac{(5.1 \text{ lb/day})}{(0.95 \text{ MGD})(8.345)}$	=	$\frac{(7.8 \text{ lb/day})}{(0.95 \text{ MGD})(8.345)}$
		= 1.0 mg/L

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, *E. coli*, Total Phosphorus, Total Phosphorus annual average and Total Nitrogen annual average.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

The mass loading (lb/d) for Total Phosphorus monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 8.345.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.95 MGD.

Effective Dates: Beginning with the permit's effective date and lasting until the expiration date of the permit.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS		
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	2,3,4	4 mg/L	13 kg/day	6 mg/L	20 kg/day	NA	NA	3D/W	8H-C
Total Suspended Solids (TSS)	2,3,4	5.3 mg/L	19 kg/day	7.8 mg/L	28 kg/day	NA	NA	3D/W	8H-C
Dissolved Oxygen (DO)	2,3	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100mls		NA		NA	NA	3D/W ^(d)	Grab
Ammonia, as N (May – November)	3,4	2.4 mg/L		3.2 mg/L		NA	NA	3D/W	8H-C
Ammonia, as N (December – April)	3,4	4.6 mg/L		6.2 mg/L		NA	NA	3D/W	8H-C
Total Kjeldahl Nitrogen (TKN)	3,5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Nitrate+Nitrite, as N	3, 5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Total Nitrogen ^a	3, 5	NL (mg/L)		NA		NA	NA	2/M	Calculated
Total Nitrogen – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year ^{b, c}	3, 5	4.0 mg/L		NA		NA	NA	1/YR	Calculated
Total Phosphorus	2,3,4,5	0.60 mg/L	5.1 lb/day	1.0 mg/L	7.8 lb/day	NA	NA	3D/W	8H-C
Total Phosphorus – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year ^b	3, 5	0.30 mg/L		NA		NA	NA	1/YR	Calculated

The basis for the limitations codes are:

MGD = Million gallons per day.

1/D = Once per day.

1. Federal Effluent Requirements

NA = Not applicable.

3D/W = Three days per week.

2. Best Professional Judgment

NL = No limit; monitor and report.

1/M = Once per month.

3. Water Quality Standards

S.U. = Standard units.

2/M = Twice per month, >7 days apart.

4. 9VAC25-410 (Occoquan Policy)

TIRE = Totalizing, indicating and recording equipment.

1/YR = Once every twelve months.

5. 9VAC25-40 (Nutrient Regulation)

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by $\geq 10\%$ or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for more information on the nutrient calculations.

c. The TN concentration limit for the 0.95 MGD flow was amended in June 2013 to 4.0 mg/L by the State Water Control Board. This was a regulatory amendment to 9VAC25-720-50.C amending the TN waste load allocation for Vint Hill WWTP based on a 4.0 mg/L TN concentration.

d. *E. coli* sampling shall be conducted three days per week between 10am and 4pm.

20. Other Permit Requirements:

- a. Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

- b. Permit Section Part I.C., details the requirements of a Pretreatment Program.

The VPDES Permit Regulation at 9VAC25-31-730 through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants that pass through or interfere with the operation of the POTW, or are otherwise subject to pretreatment standards, to develop a pretreatment program.

The Vint Hill WWTP is a POTW with a current design capacity of 0.95 MGD. Since this facility discharges greater than 40,000 gpd, pretreatment program conditions in accordance with DEQ guidance are included in Part I.C of the VPDES permit to determine if a pretreatment program may be needed.

21. Other Special Conditions:

- a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b. **Indirect Dischargers.** Required by VPDES Permit Regulation, 9VAC25-31-200 B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class II operator.
- f. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I. This is based on the downstream public water supply of Lake Manassas and the requirements of the Occoquan Policy (9VAC25-410).

- g. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit, indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.
- h. **Water Quality Criteria Monitoring.** State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.
- i. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- j. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- k. **E3/E4.** 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
- l. **Nutrient Reopener.** 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
- m. **PCB Monitoring.** This special condition requires the permittee to conduct PCB dry weather and wet weather monitoring using ultra-low level PCB analysis to support the development of the PCB TMDL for the fish consumption use impairment in the watershed. Fish tissue monitoring conducted in South Run in 2001 and 2004 showed concentrations of PCBs in 2 different species of fish (white sucker and yellow bullhead catfish) that would exceed the current water quality criterion based tissue value (TV) of 20 ppb. At the time of the fish tissue collection, the water quality criterion based tissue value for PCBs was 54 ppb. There were no fish tissue samples collected in 2001 and 2004 in South Run that exceeded the previous criterion. Fish tissue monitoring has not been conducted in Kettle Run. In light of the more stringent fish tissue criteria and the change in location of Outfall 001 to Kettle Run, DEQ staff recommends that this facility perform low-level PCB monitoring during the upcoming permit cycle. It is recommended that this facility collect 2 samples, 1 wet and 1 dry, using EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. PCB data generated using Method 1668 revisions A, B, C are acceptable, however data generated using versions A or C is preferred.
- n. **TMDL Reopener.** This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:**a. Special Conditions:**

- 1) Instream Monitoring Special Condition was removed since the facility has collected sufficient data for the stream and no problems were noted in the review of the data.
- 2) PCB Monitoring Special Condition was added based on the recommendation of the DEQ Planning and Assessment staff due to a fish tissue impairment noted in South Run.

b. Monitoring and Effluent Limitations:

- 1) The monitoring requirements and effluent limitations for the 0.6 MGD tier were removed since the facility received the Certificate to Operate for the 0.95 MGD flow tier.
- 2) The annual average Total Nitrogen concentration of 3.0 mg/L was revised to 4.0 mg/L since the State Water Control Board approved the regulatory amendment in June 2013.

24. Variances/Alternate Limits or Conditions:

None.

25. Public Notice Information:

First Public Notice Date:

May 21, 2014

Second Public Notice Date:

May 28, 2014

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, Alison.Thompson@deq.virginia.gov. See Attachment 8 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:Previous Board Action(s):

The Total Nitrogen (TN) annual average concentration limit for the 0.95 MGD flow was amended in June 2013 to 4.0 mg/L by the State Water Control Board. This was a regulatory amendment to 9VAC25-720-50.C amending the TN wasteload allocation for Vint Hill WWTP based on a 4.0 mg/L TN concentration.

Staff Comments:

None.

Public Comment:

No comments were received during the public notice.

Interpretation of the Occoquan Policy:

With the 2004 reissuance of this permit, the expansion of the Vint Hill WWTP required DEQ to determine which section of the Occoquan Policy was applicable to the expansion.

- › 9VAC25-410-20 (Long-range policy) which states in part that “the number of high-performance regional plants which shall be permitted in this watershed is not more than three, but preferably two, generally located as follows: One plant in the Fauquier County/Warrenton Area and one plant in the Manassas are to serve the surrounding area in Price William, Fairfax and Loudoun counties”.
- › 9VAC25-410-30 (Expansion of existing plants in the Occoquan watershed) which states in part that “existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream”. The Vint Hill WWTP predates the Occoquan Policy and is allowed to expand under the Policy.

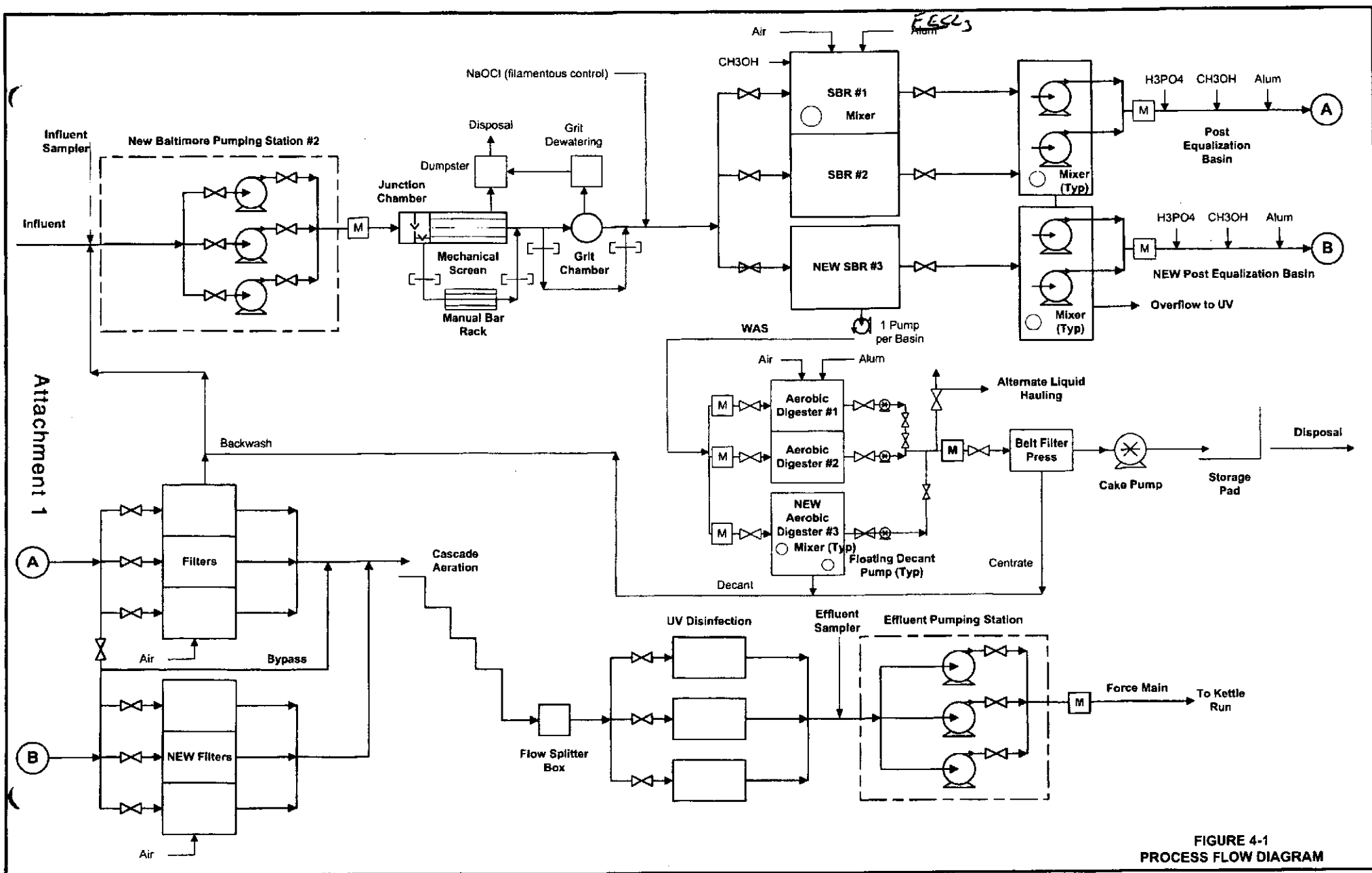
No definition of “regional” is found within the Policy or any related regulation. Therefore, staff made an interpretation as to how the Policy governed the proposed expansion. DEQ, with the concurrence of VDH, developed the following implementation of the Policy:

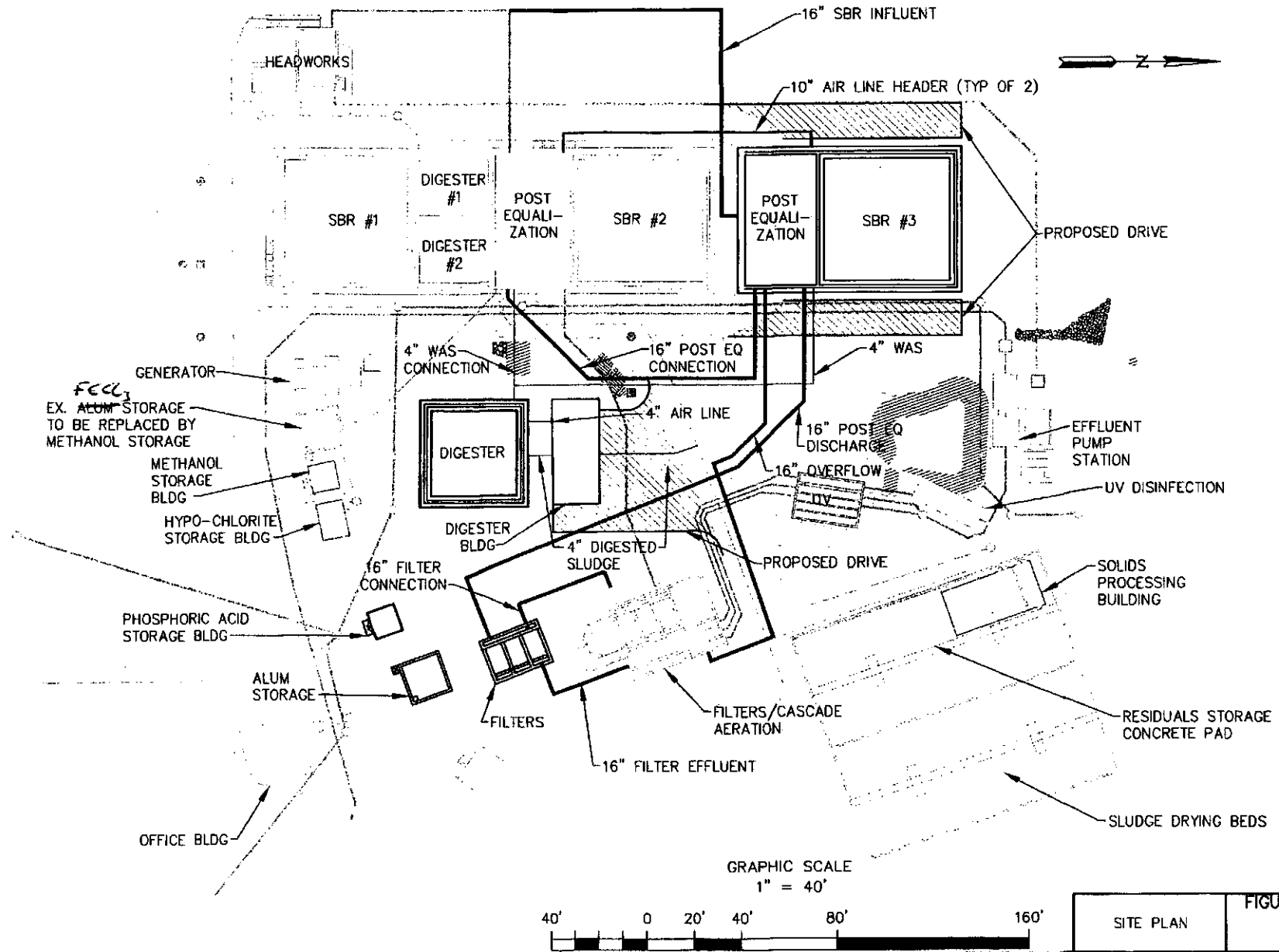
- › If the expanded flows are to be discharged to South Run, the location as of the previous reissuance, then 9VAC25-410-30 shall govern the discharge until the flows approach 1.0 MGD. Flows that approach 1.0 MGD shall be considered subject to the requirements of a regional plant as provided in 9VAC25-410-20. Staff believed the added requirements were justified due to the proximity of the discharge to the drinking water intake in Lake Manassas.
- › If the expanded flows are to be discharged to the Kettle Run watershed, such that the effluent does not enter Lake Manassas, staff's position was that flows less than 1.0 MGD be subject to 9VAC25-410-30. Staff believed this was an appropriate implementation as the nearest drinking water intake is located 37 miles and two reservoirs down river. Additionally, STPs with design flow rates of 1.0 MGD or greater are considered major dischargers and staff likened the term “regional” to “major”.

It was also staff's opinion that regardless of design flows, the expansion of the Vint Hill WWTP beyond the original 0.246 MGD design flow predestined the plant to be the regional plant prescribed by the Occoquan Policy. That is, the above interpretation and implementation are based on:

- › The expectation that no other STP will be proposed for this general area; and
- › The Vint Hill WWTP will eventually be the regional plant prescribed by 9VAC25-410-20 of the Occoquan Policy.

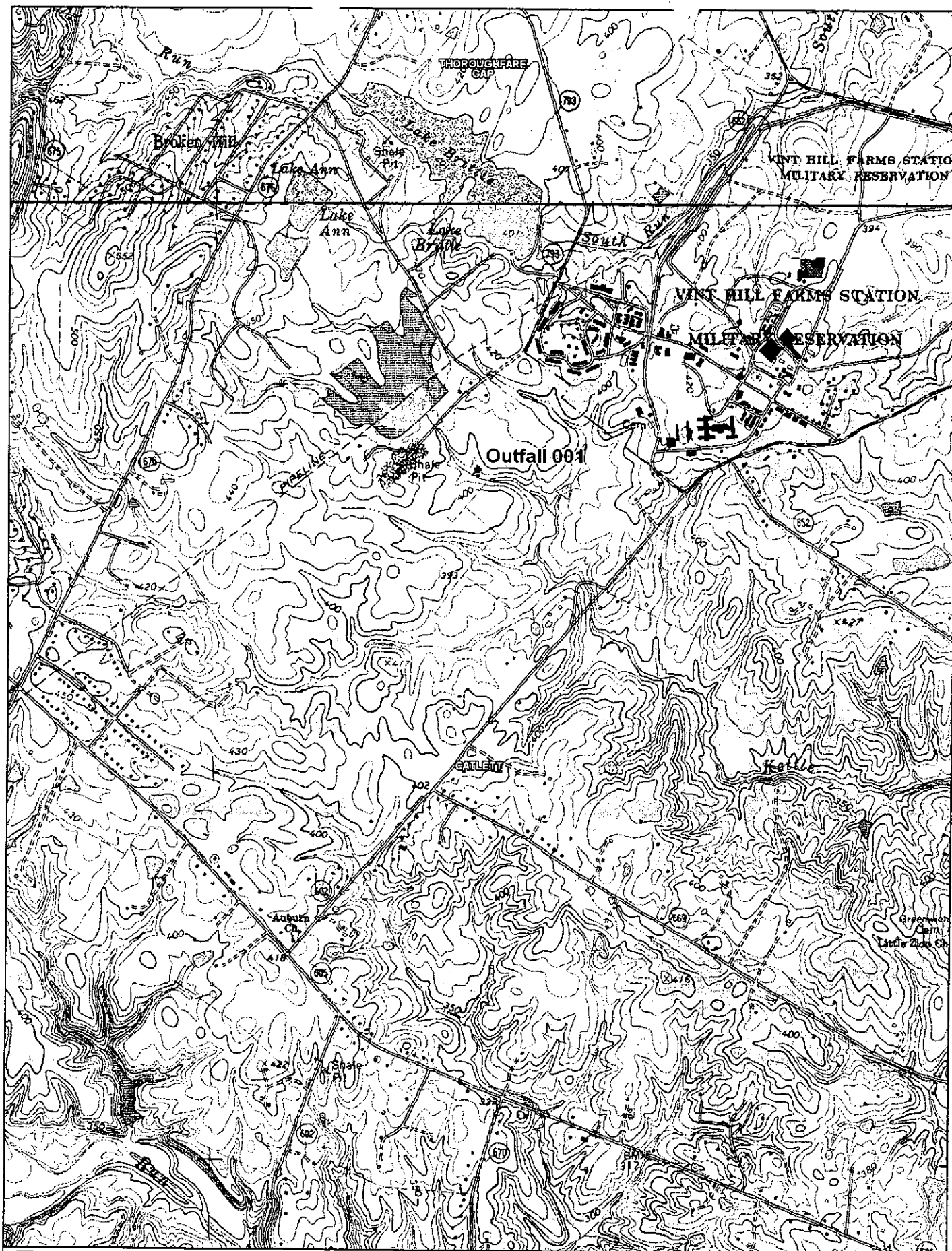
With the 2009 reissuance, expanded flows are discharged to the Kettle Run watershed and the requirements of 9VAC25-410-30 are applicable. Should the facility expand to a flow of 1.0 MGD or greater, the facility shall be considered a high-performance regional plant. At that time, the minimum effluent quality requirements for any regional sewage treatment plant in the Occoquan watershed (9VAC25-410-20) shall apply in lieu of Occoquan Policy caps.





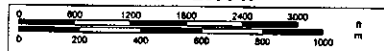
SITE PLAN

FIGURE NO.
4-2



© 2002 DeLorme. 3-D TopoQuads ©. Data copyright of content owner.
www.delorme.com

Scale 1 : 25,000
1" = 2080 ft





COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

July 22, 2009

Mr. Barney Durrett
General Manager
Fauquier County Water & Sanitation Authority
7172 Kennedy Rd
Vint Hill Farms
Warrenton, VA 20187-3907

Re: Vint Hill Farms Station WWTP, Permit # VA0020460

Dear Mr. Durrett:

Attached is a copy of the Site Inspection Report generated from the Facility Compliance Inspection conducted at Vint Hill Farms Station – Wastewater Treatment Plant (WWTP) on June 19, 2009.

A written response concerning the items listed in the Required Corrective Actions Section is due to this office by August 24, 2009. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you chose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3882 or by E-mail at Sharon.Allen@deq.virginia.gov.

Sincerely,

A handwritten signature in cursive script that reads "Sharon Allen".

Sharon Allen
Environmental Specialist II

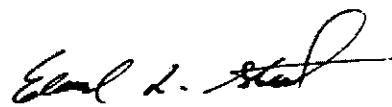
cc: Permits / DMR File

Electronic copy sent:

Compliance Manager, Enforcement- DEQ
Wesley Basore, Steve Shelton- FCSA

Virginia Department of Environmental Quality

RECON INSPECTION REPORT

FACILITY NAME: Vint Hill Farms Station STP		INSPECTION DATE: June 19, 2009		
		INSPECTOR: S. Allen		
PERMIT No.: VA0020460		REPORT DATE: July 21, 2009		
TYPE OF FACILITY: <input checked="" type="checkbox"/> Municipal <input type="checkbox"/> Major <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Federal <input type="checkbox"/> Small Minor <input type="checkbox"/> HP <input type="checkbox"/> LP	TIME OF INSPECTION:		Arrival 1000	Departure 1145
	TOTAL TIME SPENT (including prep & travel)		8 hrs	
PHOTOGRAPHS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		UNANNOUNCED INSPECTION? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
REVIEWED BY / Date:  7/21/09				
PRESENT DURING INSPECTION: Bo Backe, Jim Treakle, Troy Willingham				

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Weather- partly sunny and warm.
- Toured facility with Jim Treakle. Photos by S. Allen.
- Construction of the next plant expansion phase is under way and several areas of the property have been dug up.
- The headworks area was clean and well maintained. Staff is pleased with way the micro strainer is working
- Micro Cg was being fed at the headworks, but staff has changed the location. A chemical tote is still in place at the headworks.
- Staff is now adding Micro Cg (from Environmental Operating Solutions) to assist in denitrification in Sequential Batch Reactor Basin (SBR) #2. The chemical feed pump is on a timer to add during the React stage. Methanol is also being fed to the SBRs
- SBR # 2 was in React-Fill stage; SBR #1 was in settling stage. Staff is currently running 4 batches a day for each SBR.
- Alum is currently being added to the SBRs to promote flocculation. Alum will be replaced by ferrous chloride in the near future.
- Both digesters were in operation. Digester #1- mixer on; Digester #2- settling/decanting
- Supernatant from SBRs enters the Post-Equalization Basin, and is then pumped to the denitrification filters. These filters were not yet installed at the time of the last technical inspection (Oct. 23, 2007). Filters are followed by a post aeration step cascade.

VA DEQ Recon Inspection Report

Permit #

VA0020460

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Filter effluent passes through the new UV disinfection system (Trojan 3000). There are 2 channels (1 and 2) with 2 banks each (A and B) which are activated depending on flow. On this day, Banks 1B and 2B were on; Intensity meters: 1B = 14.0 mW/cm², 2B = 13.1 mW/cm². The original UV system is still in place and available for use if needed (usually during high flow events). What is the acceptable range - is 14.0 & 13.1 OK?
- The drying beds are gone and the area is being used for storage. Waste activated sludge from the digesters is sent through a new belt press. The press runs at approx 30gpm. Processed sludge falls into a hopper and is pumped up 12 ft to the truck fill hopper. Staff has been operating the press approximately 2-3 days per week, based on need.
- The new outfall at Kettle Creek is about 2 miles away - not observed on this visit.
- I skimmed through the operator log. Changes to plant processes appear to be made almost daily.
- Reviewed lab paperwork. All lab equipment is in operating condition and lab thermometers were checked against an NIST traceable thermometer on 1-27-09.
- Operators are collecting 3 MLSS samples daily to run on site and one that is sent to Remington. Results from Vint Hill and Remington generally agree within 10 percent.

VA DEQ Recon Inspection Report

Permit #	VA0020460
----------	-----------

EFFLUENT FIELD DATA:

Flow <input style="width: 50px;" type="text"/> MGD	Dissolved Oxygen <input style="width: 50px;" type="text"/> mg/L	TRC (Contact Tank) <input style="width: 50px;" type="text"/> mg/L
pH <input style="width: 50px;" type="text"/> S.U.	Temperature <input style="width: 50px;" type="text"/> °C	TRC (Final Effluent) <input style="width: 50px;" type="text"/> mg/L
Was a Sampling Inspection conducted? <input type="checkbox"/> Yes (see Sampling Inspection Report) <input checked="" type="checkbox"/> No		

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

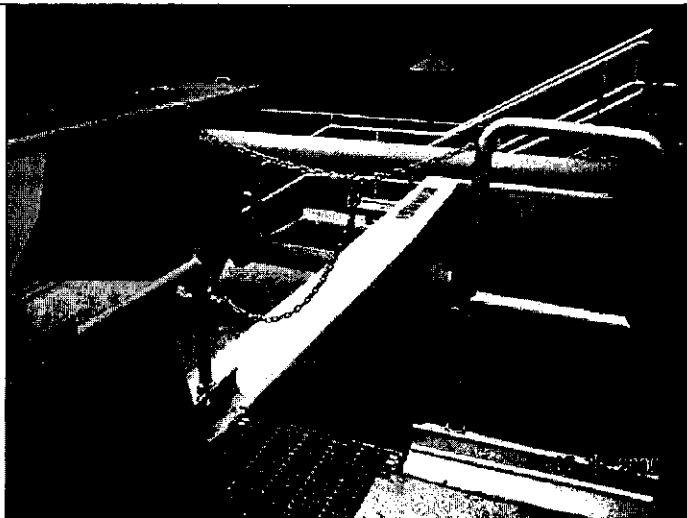
1. Type of outfall: <input type="checkbox"/> Shore based <input type="checkbox"/> Submerged	Diffuser? <input type="checkbox"/> Yes <input type="checkbox"/> No
2. Are the outfall and supporting structures in good condition?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Final Effluent (evidence of following problems):	<input type="checkbox"/> Sludge bar <input type="checkbox"/> Grease <input type="checkbox"/> Turbid effluent <input type="checkbox"/> Visible foam <input type="checkbox"/> Unusual color <input type="checkbox"/> Oil sheen
4. Is there a visible effluent plume in the receiving stream?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5. Receiving stream:	<input type="checkbox"/> No observed problems <input type="checkbox"/> Indication of problems (explain below)
<u>Comments:</u> The outfall and receiving stream were not observed on this visit.	

REQUIRED CORRECTIVE ACTIONS:

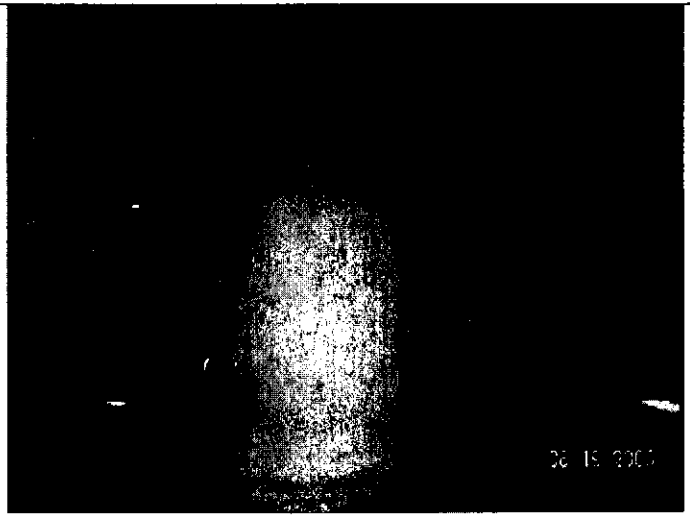
1. The O&M manual should be updated to reflect that Micro C is added at the SBRs and Alum will be replaced with ferrous chloride.	
2. The O&M manual does not discuss the acceptable range of readings for the UV intensity meters monitoring the Trojan 3000 system and I was not able to find this information on line. Please provide this information to the DEQ's Northern Regional Office and include a copy of it in the O&M Manual.	

NOTES and COMMENTS:

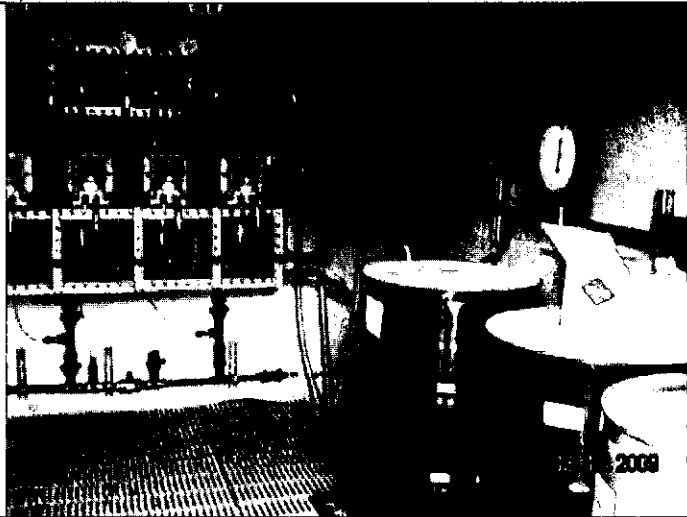
<ul style="list-style-type: none"> ○ The time in the cycle that the MLSS and volatile solids samples are collected appears to vary. The O&M manual states that "samples should be collected in a consistent manner to provide the most representative and useful data. Sampling should be performed at the same time each day and in the same location and manner. MLSS samples should be taken when the basin is at the low water level (immediately after a decant phase and prior to the next step)." Please note- it may not be possible to sample at the same time each day depending on the cycle settings, especially if the settings are changed, but should be collected at the same point in the cycle. ○ Please note that the addition of ferrous chloride for flocculation may result in a need for more frequent cleaning of the UV bulbs due to coating by the iron. ○ Staff has been directed to keep the exterior lights around the plant off to save on electricity costs. Because the operators arrive early in the morning and there is construction activity, this is a safety concern, especially once the sun rises later in the day. 	
--	--



1) Headworks.



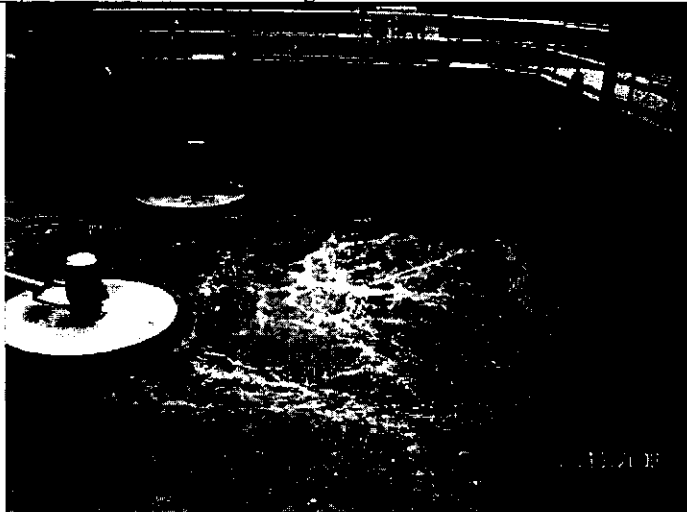
2) Micro Cg tank



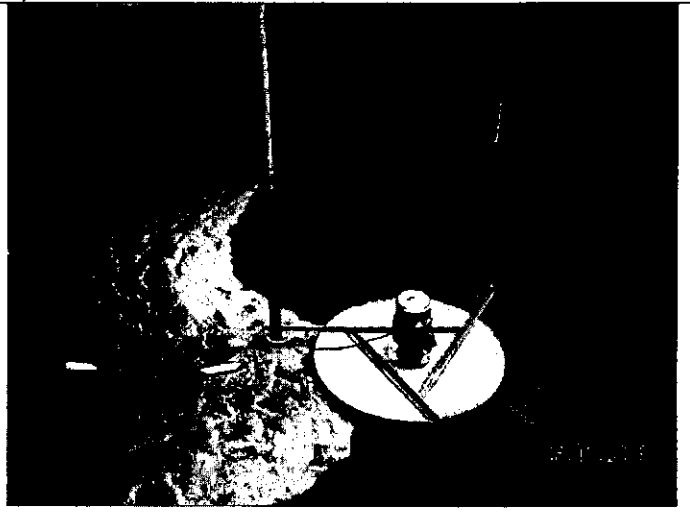
3) Chemical feed building.



4) SBR #1



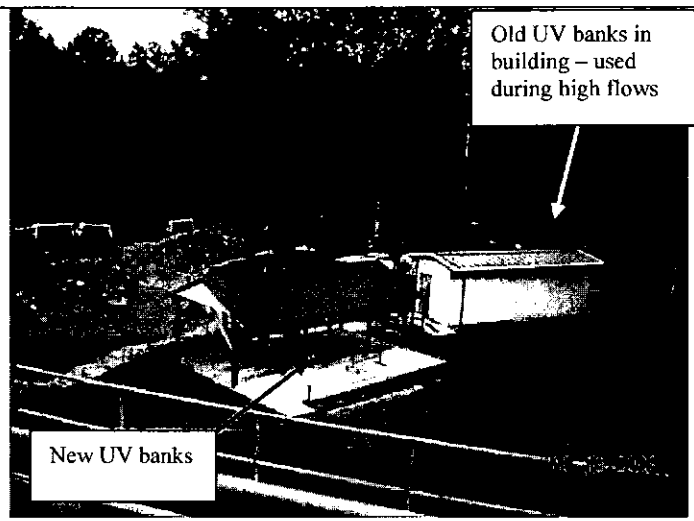
5) SBR #2



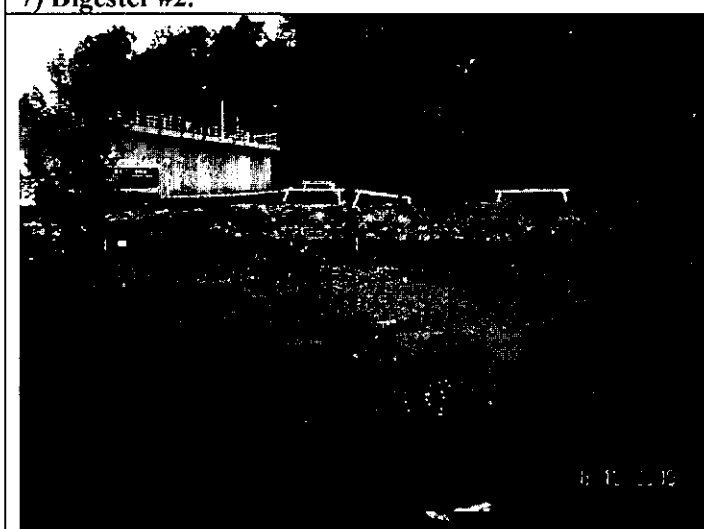
6) Digester #1



7) Digester #2.



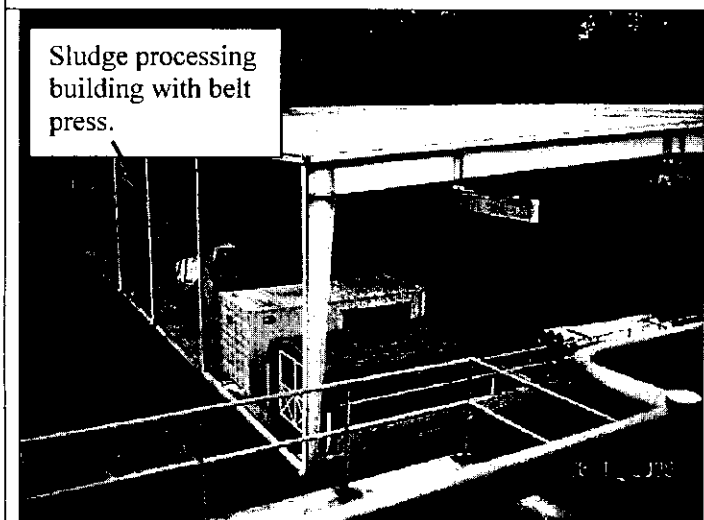
8) Overview from denitrification filters.



9) Location of next SBR.



10) New UV banks with construction activity in background.



11) Location of old drying beds.

To: Alison Thompson
From: Jennifer Carlson

Date: December 30, 2013
Subject: Planning Statement for Vint Hill WWTP
Permit Number: VA0020460

Information for Outfall 001:

Discharge Type: Municipal
Discharge Flow: 0.95 MGD
Receiving Stream: Kettle Run
Latitude / Longitude: 38° 44' 18.1" / -77° 41' 37.1"
Rivermile: 14.33
Streamcode: 1aKET
Waterbody: VAN-A19R
Water Quality Standards: Class III, Section 7a, special stds. g
Drainage Area: 0.5 mi²

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

Outfall 001 discharges to a segment of Kettle Run that is not monitored or assessed. The nearest downstream monitoring station is station 1aKET012.03 on Kettle Run, located at the Route 761 bridge crossing, approximately 2.5 miles downstream of Outfall 001. The following is the water quality summary for this segment of Kettle Run, as taken from the 2012 Integrated Report:

Class III, Section 7a, special stds. g.

The DEQ ambient monitoring station located on this segment of Kettle Run:

- 1aKET012.03, at Route 761

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Occoquan River watershed. The aquatic life use is considered fully supporting. The fish consumption use was not assessed. The wildlife use is considered fully supporting.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report							
Kettle Run	Recreation	<i>E. coli</i>	0.6 miles	Occoquan River and Tributary Streams Bacteria 11/15/2006	1.65E+12 cfu/year <i>E. coli</i>	126 cfu/100 ml --- 0.95 MGD	---

At the time the Bacteria TMDL for the Occoquan River and tributary streams was written, Vint Hill Farms WWTP(VA002460) had a design flow of 0.246 MGD and discharged into South Run. This facility was given a WLA of 4.29E+11 cfu/year *E. coli*. The facility also had plans for expansion, which included moving the discharge from South Run to Kettle Run. In account for this scenario in the TMDL, future growth was added to the Kettle Run watershed equivalent to 5x a design flow of 0.95 MGD (8.25E+12 cfu/year *E. coli*). In May 2008, Vint Hill Farms WWTP completed their expansion and began discharging to Kettle Run with a maximum design flow of 0.95 MGD. This facility has now been assigned a WLA of 1.65E+12 cfu/year *E. coli*.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

Fish tissue monitoring conducted in South Run in 2001 and 2004 showed concentrations of PCBs in 2 different species of fish (white sucker and yellow bullhead catfish) that would exceed the current water quality criterion based tissue value (TV) of 20 ppb. At the time of the fish tissue collection, the water quality criterion based tissue value for PCBs was 54 ppb. There were no fish tissue samples collected in 2001 and 2004 in South Run that exceeded the previous criterion. Fish tissue monitoring has not been conducted in Kettle Run. In light of the more stringent fish tissue criteria and the change in location of Outfall 001 to Kettle Run, DEQ staff recommends that this facility perform low-level PCB monitoring during the upcoming permit cycle. It is recommended that this facility collect 2 samples, 1 wet and 1 dry, using EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. PCB data generated using Method 1668 revisions A, B, C are acceptable, however data generated using versions A or C is preferred.

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within 5 miles of this discharge.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Vint Hill WWTP - 0.95 MGD

Permit No.: VA0020460

Receiving Stream: Kettle Run

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	164 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.5 SU
10% Maximum pH =	SU	30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.95 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile ^c	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin ^c	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.99E+01	2.22E+00	na	--	1.99E+01	2.22E+00	na	--	--	--	--	--	--	--	--	--	1.99E+01	2.22E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.99E+01	4.23E+00	na	--	1.99E+01	4.23E+00	na	--	--	--	--	--	--	--	--	--	1.99E+01	4.23E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^c	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine ^c	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis(2-Chloroethyl) Ether ^c	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate ^c	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform ^c	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	6.9E+00	1.7E+00	na	--	6.9E+00	1.7E+00	na	--	--	--	--	--	--	--	--	--	6.9E+00	1.7E+00	na	--
Carbon Tetrachloride ^c	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^c	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	8.5E+02	1.1E+02	na	--	8.5E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	8.5E+02	1.1E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^c	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	2.1E+01	1.4E+01	na	--	2.1E+01	1.4E+01	na	--	--	--	--	--	--	--	--	--	2.1E+01	1.4E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD ^c	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE ^c	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine ^c	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane ^c	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane ^c	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^c	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropane ^c	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene ^c	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine ^c	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.2E+02	2.5E+01	na	--	2.2E+02	2.5E+01	na	--	--	--	--	--	--	--	--	--	2.2E+02	2.5E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	2.8E+02	3.1E+01	na	4.6E+03	2.8E+02	3.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	2.8E+02	3.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	8.1E+00	--	na	--	8.1E+00	--	na	--	--	--	--	--	--	--	--	--	8.1E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	1.8E+02	1.8E+02	na	2.6E+04	1.8E+02	1.8E+02	na	2.6E+04	--	--	--	--	--	--	--	--	1.8E+02	1.8E+02	na	2.6E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	1.0E+00
Chromium III	6.7E+01
Chromium VI	6.4E+00
Copper	8.2E+00
Iron	na
Lead	1.5E+01
Manganese	na
Mercury	4.6E-01
Nickel	1.8E+01
Selenium	3.0E+00
Silver	3.2E+00
Zinc	7.1E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance



Analytical Report

Fauquier County WSA
Vint Hill WWTP
7172 Kennedy Road
Warrenton, VA 20187-1646

Report Date: 04/01/2014
Job #: 0002803
Customer #: 99V
Customer PO #:
Collected By: Customer
Sample Location: Vint Hill WWTP - Att. A

Sample ID#:	0031335	Sample Source:	Effluent
Sample Date/Time:	03/11/2014 / 13:00	Date Received:	03/12/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Total Hardness as CaCO3	164	mg/l	2.00	SM 2340 C-2011	03/18/2014	12:00	KW
Cadmium, Dissolved	<1.0	ug/l	1.0	EPA 200.7	03/18/2014	12:00	200
Copper, Dissolved	<5.0	ug/l	5.0	EPA 200.7	03/18/2014	12:00	200
Lead, Dissolved	<5.0	ug/l	5.0	EPA 200.7	03/18/2014	12:00	200
Mercury, Total (low level)	0.766	ng/l	0.50	EPA 1631E	03/24/2014	16:30	200
Mercury, Dissolved	<0.20	ug/l	0.20	EPA 245.1	03/17/2014	19:10	200
Nickel, Dissolved	<5.0	ug/l	5.0	EPA 200.7	03/18/2014	12:00	200
Selenium, Dissolved	<1.0	ug/l	1.0	EPA 200.8	03/27/2014	04:50	200
Silver, Dissolved	<0.10	ug/l	0.10	EPA 200.8	03/27/2014	04:50	200
Dissolved Hexavalent Chromium	<0.025	ug/l	0.025	EPA 218.6	03/25/2014	12:18	200

200 Samples subcontracted to VELAP ID# 460165/460222



VELAP Lab ID # 460019 VA DW Lab ID # 00115

Vint Hill WWTP Final Effluent Maximum values for pH

<u>Due Date for Data</u>	<u>Maximum pH (S.U.)</u>		
10-Feb-03	7.9		
10-Mar-03	7.6		
10-Apr-03	7.4		
10-May-03	7.4	90th percentile pH (S.U.) =	7.8 S.U.
10-Jun-03	7.4		
10-Jul-03	7.4		
10-Aug-03	7.3		
10-Sep-03	7.5		
10-Oct-03	7.7		
10-Nov-03	7.4		
10-Dec-03	7.3		
10-Jan-04	7.4		
10-Feb-04	7.6		
10-Mar-04	7.5		
10-Apr-04	7.4		
10-May-04	7.3		
10-Jun-04	7.3		
10-Jul-04	7.4		
10-Aug-04	7.3		
10-Sep-04	7.4		
10-Oct-04	7.3		
10-Nov-04	7.2		
10-Dec-04	7.1		
10-Jan-05	7.4		
10-Feb-05	7.5		
10-Mar-05	7.6		
10-Apr-05	7.3		
10-May-05	7.3		
10-Jun-05	7.4		
10-Jul-05	7.3		
10-Aug-05	7.2		
10-Sep-05	7.8		
10-Oct-05	7.3		
10-Nov-05	7.3		
10-Dec-05	7.4		
10-Jan-06	7.3		
10-Feb-06	7.2		
10-Mar-06	7.4		
10-Apr-06	7.6		
10-May-06	7.5		
10-Jun-06	7.4		
10-Jul-06	7.5		
10-Aug-06	7.5		
10-Sep-06	7.5		
10-Oct-06	7.3		
10-Nov-06	7.5		
10-Dec-06	7.6		
10-Jan-07	7.7		
10-Feb-07	7.7		
10-Mar-07	8.2		
10-Apr-07	7.5		
10-May-07	7.7		

Due Date for Data Maximum pH (S.U.)

10-Jun-07	7.7
10-Jul-07	7.7
10-Aug-07	7.8
10-Sep-07	7.6
10-Oct-07	7.4
10-Nov-07	7.3
10-Dec-07	7.2
10-Jan-08	7.1
10-Feb-08	7.1
10-Mar-08	7.3
10-Apr-08	7.6
10-May-08	7.3
10-Jun-08	7.2
10-Jun-08	7.4
10-Jul-08	7.5
10-Aug-08	7.6
10-Sep-08	7.6
10-Oct-08	7.4
10-Nov-08	7.5
10-Dec-08	7.4
10-Jan-09	7.5
10-Feb-09	7.6
10-Mar-09	7.5
10-Apr-09	7.5
10-May-09	7.4
10-Jun-09	7.5
10-Jul-09	7.6
10-Aug-09	7.8
10-Sep-09	7.9
10-Oct-09	7.8
10-Nov-09	7.7
10-Dec-09	7.6
10-Jan-10	8
10-Feb-10	7.4
10-Mar-10	7.4
10-Apr-10	7.4
10-May-10	7.6
10-Jun-10	7.6
10-Jul-10	7.6
10-Aug-10	7.6
10-Sep-10	7.8
10-Oct-10	7.9
10-Nov-10	7.7
10-Dec-10	7.6
10-Jan-11	7.6
10-Feb-11	7.6
10-Mar-11	7.4
10-Apr-11	7.6
10-May-11	7.3
10-Jun-11	7.8
10-Jul-11	7.8
10-Aug-11	7.8
10-Sep-11	7.7
10-Oct-11	7.8
10-Nov-11	7.7

Due Date for Data Maximum pH (S.U.)

10-Dec-11	7.6
10-Jan-12	7.6
10-Feb-12	7.6
10-Mar-12	7.8
10-Apr-12	7.7
10-May-12	7.8
10-Jun-12	7.8
10-Jul-12	7.7
10-Aug-12	7.8
10-Sep-12	7.9
10-Oct-12	8
10-Nov-12	7.8
10-Dec-12	7.7
10-Jan-13	7.7
10-Feb-13	7.7
10-Mar-13	7.6
10-Apr-13	7.6
10-May-13	8.1
10-Jun-13	7.7
10-Jul-13	7.7
10-Aug-13	7.8
10-Sep-13	7.9
10-Oct-13	8
10-Nov-13	8
10-Dec-13	7.8
10-Jan-14	7.6
10-Feb-14	7.5

4/6/2009 2:23:00 PM

Facility = Vint Hill WWTP - 0.95 MGD

Chemical = Ammonia - Summer

Chronic averaging period = 30

WLAa = 20

WLAc = 2.2

Q.L. = 0.1

samples/mo. = 12

samples/wk. = 3

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 4.43887420551588

Average Weekly limit = 3.2467865723694

Average Monthly Limit = 2.4184316263878

The data are:

4/6/2009 2:22:31 PM

Facility = Vint Hill WWTP - 0.95 MGD

Chemical = Ammonia - Winter

Chronic averaging period = 30

WLAa = 20

WLAc = 4.2

Q.L. = 0.1

samples/mo. = 12

samples/wk. = 3

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 8.47421439234851

Average Weekly limit = 6.19841072906885

Average Monthly Limit = 4.61700583219488

The data are:

**VIRGINIA WATER QUALITY IMPROVEMENT FUND
POINT SOURCE GRANT AND
OPERATION AND MAINTENANCE AGREEMENT**

Contract #440-S-08-12

THIS AGREEMENT is made as of this 30th day of May, 2008, by and between the Director of the Virginia Department of Environmental Quality in his official capacity, or his designee (the "Director"), and Fauquier County Water and Sanitation Authority (the "Grantee").

Pursuant to the Virginia Water Quality Improvement Act of 1997, Chapter 21.1, Title 10.1 of the Code of Virginia (1950), as amended (the "Act"), the General Assembly created the Virginia Water Quality Improvement Fund (the "Fund"). The Director, in coordination with the Director of the Department of Conservation and Recreation, is authorized by the Act to make Water Quality Improvement grants related to point source pollution control, in accordance with guidelines established pursuant to Section 10.1-2129 of the Code, and enter into agreements with grantees under the Act which shall, in accordance with Sections 10.1-2130 and 10.1-2131, provide for the payment of the total amount of the grant and require proper long-term operation, monitoring and maintenance of funded projects.

The Grantee has been approved by the Director to receive a Grant from the Fund subject to the terms and conditions herein to finance sixty percent (60%) of the cost of the Eligible Project, which consists of the design and installation of Nutrient Removal Technology as described herein. The Grantee will use the Grant to finance that portion of the Eligible Project Costs not being paid for from other sources as set forth in the Total Project Budget in Exhibit B to this Agreement. Such other sources may include, but are not limited to, the Virginia Water Facilities Revolving Fund, Chapter 22, Title 62.1 of the Code of Virginia (1950), as amended.

As required by the Act, this Agreement provides for payment of the Grant, design and construction of the Project, and proper long-term operation, monitoring, and maintenance of the Project. This Agreement is supplemental to the State Water Control Law, Chapter 3.1, Title 62.1 of the Code of Virginia (1950), as amended, and it does not limit in any way the other water quality restoration, protection and enhancement, or enforcement authority of the Director, the State Water Control Board (the "Board") or the Department of Environmental Quality (the "Department").

**ARTICLE I
DEFINITIONS**

1. The capitalized terms contained in this Agreement shall have the meanings set forth below unless the context requires otherwise and any capitalized terms not otherwise defined herein shall have the meaning assigned to such terms in the Act:

(a) "Agreement" means this Virginia Water Quality Improvement Fund Point Source Grant and Operation and Maintenance Agreement between the Director and the Grantee, together with any amendments or supplements hereto.

Attachment 7

(b) "Authorized Representative" means any member, official or employee of the Grantee authorized by resolution, ordinance or other official act of the governing body of the Grantee to perform the act or sign the document in question.

(c) "Eligible Project" means the particular Nutrient Removal Technology described in Exhibit A to this Agreement to be designed and constructed by the Grantee with, among other monies, the Grant, with such changes thereto as may be approved in writing by the Director and the Grantee.

(d) "Eligible Project Costs" means costs of the individual items comprising the Eligible Project as permitted by the Act with such changes thereto as may be approved in writing by the Director and the Grantee.

(e) "Extraordinary Conditions" means unforeseeable or exceptional conditions resulting from causes beyond the reasonable control of the Grantee such as, but not limited to fires, strikes, acts of God, and acts of third parties that singly or in combination cause material breach of this Agreement.

(f) "Facility" means all plants, systems, unit processes, equipment or property related to the Project, and owned, operated, or maintained by the Grantee and used in connection with the treatment of wastewater.

(g) "Grant" means the particular grant described in Section 4.0 of this Agreement, with such changes thereto as may be approved in writing by the Director and the Grantee.

(h) "Monetary Assessment" means a contractual or stipulated penalty as described in Section 10.1-2130 of the Code.

(i) "Nutrient Removal Technology" means state-of-the-art nutrient removal technology, biological nutrient removal technology, or other nutrient removal technology, as further described in Section 10.1-2117 of the Code.

(j) "Preliminary Engineering Proposal" means the engineering report and preliminary plans for the Project as described in 9 VAC 25-790-110, as modified by the final engineering design approved by the Department.

(k) "Total Eligible Project Budget" means the sum of the Eligible Project Costs as set forth in Exhibit B to this Agreement, with such changes thereto as may be approved in writing by the Director and the Grantee.

(l) "Total Project Budget" means the sum of the Eligible Project Costs and any ineligible costs that are solely the responsibility of the Grantee, as set forth in Exhibit B to this Agreement, with such changes thereto as may be approved in writing by the Director and the Grantee.

(m) "Project Engineer" means the Grantee's engineer who must be a licensed professional engineer registered to do business in Virginia and designated by the Grantee as the Grantee's engineer for the Project in a written notice to the Department.

(n) "Project Schedule" means the schedule for the Project as set forth in Exhibit C to this Agreement, with such changes thereto as may be approved in writing by the Director and the Grantee.

ARTICLE II

SCOPE OF PROJECT

2. The Grantee will cause the Project to be designed, constructed and placed in operation as described in Exhibit A to this Agreement to meet effluent concentration limitations of 3.0 mg/l for total nitrogen, and 0.30 mg/l for total phosphorus, both on an annual average basis. These effluent performance limitations may be revised in accordance with provisions in Article V of this Agreement.

ARTICLE III

SCHEDULE

3. The Grantee will cause the Eligible Project to be designed, constructed and placed in operation in accordance with the Project Schedule in Exhibit C to this Agreement.

ARTICLE IV

COMPENSATION

4.0. Grant Amount. The total grant award from the Fund under this Agreement is \$2,058,538 and represents the Commonwealth's sixty percent (60%) share of the Total Eligible Project Budget. The Grantee's share of the cost of Nutrient Reduction Technology is \$1,372,359, and represents forty percent (40%) of the Total Eligible Project Budget. Any material changes made to the Eligible Project after execution of this Agreement, which alters the Total Eligible Project Budget, will be submitted to the Department for review of grant eligibility. The amount of the grant award set forth herein may be modified from time to time by agreement of the parties to reflect changes to the Eligible Project or Total Eligible Project Budget.

4.1. Payment of Grant. Payment of the Grant is subject to the availability of monies in the Fund allocated to point source pollution control and Section 4.4 herein. Disbursement of the Grant will be in accordance with the payment provisions set forth in Section 4.2 herein and the Total Eligible Project Budget.

4.2. Disbursement of Grant Funds. The Grant shall be disbursed in four phases, identified by incremental percentages of 25%, 50%, 75% and 100% expenditure of the Grantee's share of the cost of Nutrient Removal Technology. To qualify for a disbursement, the Grantee must provide written certification to the Department when each of these expenditure percentages has been achieved. Determining achievement of these percentages shall be done as follows:

- 1) First, calculate the total cost expended on Nutrient Removal Technology:
$$\text{CNRT EXP} = [(\text{TEPB} / \text{TPB}) \times \text{TOT EXP}] - \text{DISB}$$

Where: CNRT EXP = Cost of Nutrient Removal Technology expended

TEPB = Total Eligible Project Budget

TPB = Total Project Budget

TOT EXP = total expenditures made to-date by the Grantee

DISB = amount of the Grant disbursed to-date

- 2) Next, calculate the percentage of the Grantee's share of the cost of Nutrient Removal Technology expended:

$$\%GNRT\ EXP = CNRT\ EXP / GNRT$$

Where: **%GNRT EXP** = percentage of Grantee's share of Nutrient Removal Technology expended

CNRT EXP = Cost of Nutrient Removal Technology expended
[from Section 4.2(1)]

GNRT = Grantee's share of the cost of Nutrient Reduction Technology
[from Section 4.0]

- 3) The Grantee may request a disbursement when %GNRT EXP first reaches each of the four phases: 25%, 50%, 75% and 100%. Multiple disbursements, not more frequently than once each calendar month, may be requested after %GNRT EXP reaches the 100% phase until project completion.

The written certification received by the Department shall include the calculations above and the following:

(a) A requisition approved by the Department, signed by the Authorized Representative and containing all receipts, vouchers, statements, invoices or other evidence of the actual payment of Total Project Costs and all other information called for by, and otherwise being in the form of, Exhibit D to this Agreement.

(b) If any requisition includes an item for payment for labor or to contractors, builders or material men, a certificate, signed by the Project Engineer, stating that such work was actually performed or such materials, supplies or equipment were actually furnished or installed in or about the construction of the Eligible Project.

Upon receipt of each such requisition and accompanying certificate(s) and schedule(s), the Director shall request the Comptroller to issue a warrant directing the State Treasurer to disburse the Grant to the Grantee in accordance with such requisition to the extent approved by the Department.

Except as may otherwise be approved by the Department, disbursements shall be held at ninety-five percent (95%) of the total grant amount to ensure satisfactory completion of the Eligible Project. Upon receipt from the Grantee of the certificate specified in Section 4.5 and a final requisition detailing all retainage to which the Grantee is then entitled, the Director, subject to the provisions of this section and Section 4.3 herein, shall request the Comptroller to issue a warrant directing the State Treasurer to disburse to the Grantee the final payment from the Grant.

4.3 Application of Grant Funds. The Grantee agrees to apply the Grant solely and exclusively to the reimbursement of Eligible Project Costs.

4.4. Availability of Funds. The Director and Grantee recognize that the availability of monies in the Fund allocated to point source pollution control is subject to appropriation by the General Assembly and allocations made by the Secretary of Natural Resources, and that at times there may not be sufficient monies in the Fund to permit prompt disbursement of grant funds due and owing the Grantee pursuant to this Agreement. To minimize the potential for such disruption in disbursements of grant funds and in satisfaction of its obligations under the Act, the Department covenants and agrees to (1) manage the allocation of grants from the Fund to ensure full funding of executed grant agreements, (2) forecast the estimated disbursements from the Fund in satisfaction of approved grants and make this forecast publicly available each year for use in the Commonwealth's budgetary process, and (3) promptly disburse to the Grantee any grant funds due and owing the Grantee pursuant to this Agreement when sufficient monies are available in the Fund to make such disbursements. The Department may determine that monies are not sufficient to promptly disburse grant funds when there are competing grant requests. To assist the Department in forecasting estimated disbursements, prior to September 30 of each year the Grantee will provide the Department with a written estimate of its projected expenditures on the Project during the next fiscal year using the same line item cost categories in the Project Budget.

4.5. Agreement to Complete Project. The Grantee agrees to cause the Project to be designed and constructed, as described in Exhibit A to this Agreement, and in accordance with (i) the schedule in Exhibit C to this Agreement and (ii) plans and specifications prepared by the Project Engineer and approved by the Department.

4.6 Notice of Substantial Completion. When the Project has been completed, the Grantee shall promptly deliver to the Department a certificate signed by the Authorized Representative and by the Project Engineer stating (i) that the Project has been completed substantially in accordance with the approved plans and specifications and addenda thereto, and in substantial compliance with all material applicable laws, ordinances, rules, and regulations; (ii) the date of such completion; (iii) that all certificates of occupancy and operation necessary for start-up for the Project have been issued or obtained; and (iv) the amount, if any, to be released for payment of the final Project Costs.

ARTICLE V **PERFORMANCE**

5.0 The Grantee's Facility shall meet a total nitrogen effluent concentration limitation of 3.0 mg/l, and a total phosphorus effluent concentration limitation of 0.30 mg/l, both on an annual average basis, except as provided in paragraph 5.1 and Article VIII of this Agreement.

The total nitrogen effluent concentration limitation above shall be revised to 4.0 mg/L, only upon State Water Control Board approval of the following regulatory amendment. After execution of this Agreement, the Department will initiate a proposed rulemaking to amend the total nitrogen waste load allocation in 9 VAC 25-720-50.C for the Vint Hill WWTF (VPDES #0020460), based on the design flow certified for operation on December 31, 2010 and a 4.0 mg/L total nitrogen effluent concentration. Should the proposed amendment not be approved, then the total nitrogen effluent concentration limitation will remain unchanged.

5.1 If, pursuant to Section 10.1-1187.6 of the Code, the State Water Control Board approves an alternative compliance method to technology-based concentration limitations in Virginia Pollutant Discharge Elimination System permits, the concentration limitations in Section 5.0 above shall be suspended subject to the terms of such approval. The terms of approval shall include requirements for operation of the installed Nutrient Removal Technology at the treatment levels for which it was designed.

ARTICLE VI

OPERATION AND MAINTENANCE

6.0 No later than ninety (90) days after issuance of a Certificate to Operate for the Project, the Grantee shall submit to the Department, for review and approval, an operation and maintenance manual for the Project. As required by the Grantee's VPDES permit, the Facility shall be operated and maintained in a manner consistent with the operation and maintenance manual as approved by the Department.

ARTICLE VII

MONITORING AND REPORTING

7.0. Monitoring. The Grantee shall monitor compliance with the numerical concentrations in Article V of this Agreement. Monitoring will be conducted at the final effluent from the facility and immediately prior to discharge to Kettle Run. Sampling frequency and type shall be in accordance with VPDES permit requirements. In the absence of total nitrogen or total phosphorus VPDES permit monitoring requirements, monitoring shall consist of a sample type and collection frequency as specified in the Chesapeake Bay General Watershed Permit Regulation (9 VAC 25-820-70.Part 1.E.). Each sample will be analyzed for total nitrogen and total phosphorus using EPA-approved test methods and reported to the Department.

7.1. Reporting. Beginning with the Project's first full calendar year of operation and each year thereafter, the Grantee will calculate the annual average concentration for total nitrogen and total phosphorus for the calendar year just ended by dividing the sum of the monthly average concentrations by twelve, and submit the results to the Department using the form attached as Exhibit E to this Agreement on or before February 1 of each year. Data excluded from the average based on the occurrence of extraordinary conditions will be identified in the report.

ARTICLE VIII

MATERIAL BREACH

8.0. Material Breach. Any failure or omission by the Grantee to perform its obligations under this Agreement, unless excused by the Department, is a material breach.

8.1. Notice of Material Breach. If at any time the Grantee determines that it is unable to perform its obligations under this Agreement, the Grantee shall promptly provide written notification to the Department. This notification shall include a statement of the reasons it is unable to perform, any actions to be taken to secure future performance and an estimate of the time necessary to do so.

8.2. Monetary Assessments for Breach. In no event shall total Monetary Assessments pursuant to this Agreement exceed (i) \$165,140 annually or (ii) \$3,302,800 during the life of this Agreement. Monetary Assessments will be paid into the State Treasury and credited to the Fund. The Director's right to collect Monetary Assessments does not affect in any way the Director's right to secure specific performance of this Agreement using such other legal remedies as may otherwise be available. Within 90 days of receipt of written demand from the Director, the Grantee shall pay the following Monetary Assessments for the corresponding material breaches of this Agreement unless the Grantee asserts a defense pursuant to the requirements of Section 8.3 herein.

(a) Beginning with the Project's first full calendar year of operation following issuance of a Certificate to Operate for the Project, for exceedance of one or both of the numerical concentration limitations applicable under Article V of this Agreement, except where the exceedance is no greater than 0.8 mg/L for total nitrogen or no more than 10%, whichever is greater, or no greater than 0.1 mg/L for total phosphorus or no more than 10%, whichever is greater, an assessment calculated as follows:

(i) For noncompliance with the total nitrogen effluent limitation in Article V, an assessment calculated using the formula in Exhibit F to this Agreement for each one-tenth of a milligram per liter of total nitrogen in excess of the limitation in Article V.

(ii) For noncompliance with the total phosphorus effluent limitation in Article V, an assessment calculated using the formula in Exhibit F to this Agreement for each one-tenth of a milligram per liter of total phosphorus in excess of the limitation in Article V.

(b) For noncompliance with any deadline in Exhibit C to this Agreement, Article VII of this Agreement, or the failure to submit the operations and maintenance manual in accordance with Article VI of this Agreement, an assessment in the amount of \$500 per day for the first 10 days of noncompliance, and \$1,000 for each day of noncompliance thereafter. Noncompliance with interim deadlines shall be excused where the Grantee complies with the final deadline in Exhibit C to this Agreement.

(c) For noncompliance with the obligation to operate and maintain the Project in a manner consistent with the manual pursuant to Article VI of this Agreement, an assessment in the amount of \$1,000 for each day of noncompliance.

8.3 Extraordinary Conditions.

(a) The Grantee may assert and it shall be a defense to any action by the Director to collect a Monetary Assessment or otherwise secure performance of this Agreement that the alleged non-performance was due to Extraordinary Conditions, provided that the Grantee:

(1) takes reasonable measures to effect a cure or to minimize any non-performance with the Agreement, and

(2) provides written notification to the Department of the occurrence of Extraordinary Conditions, together with an explanation of the events or circumstances contributing to such Extraordinary Conditions, no later than 5 days after the discovery of the Extraordinary Conditions and the resulting impacts on performance.

(b) If the Department disagrees that the events or circumstances described by the Grantee constitute Extraordinary Conditions, the Department must provide the Grantee with a written objection within sixty (60) days of Grantee's notice under paragraph 8.3(a)(2), together with an explanation of the basis for its objection.

8.4 Resolution and Remedy. If no resolution is reached by the parties, the Director or Department may immediately pursue any remedy available at law or equity. In any such action, the Grantee shall have the burden of proving that the alleged noncompliance was due to Extraordinary Conditions. In addition to any other remedy that may be available to the Director or the Department, the Director or Department may bring an action in the Circuit Court of the City of Richmond to enforce this Agreement by injunction or mandamus or stipulated penalties or to recover part or all of the grant funds. No such remedy of the Director or Department shall be deemed to be exclusive or to estop any other such remedy or the bringing of an action to enforce this Agreement. The Grantee agrees to venue to any such action in the Circuit Court of the City of Richmond, either north or south of the James River in the option of the Director. The Grantee further agrees that, in light of the public purpose of nutrient removal, any failure of the Grantee to perform its duties under this Agreement and any failure of the Project to meet the requirements of this Agreement or the requirements of any permit that may be issued by the Board regarding the Project constitutes irreparable harm to the Commonwealth for which the Director or Department lacks an adequate remedy at law.

ARTICLE IX

GENERAL PROVISIONS

9.0. Effect of the Agreement on Virginia Pollutant Discharge Elimination System (VPDES) Permit. This Agreement shall not be deemed to relieve the Grantee of its obligations to comply with the terms of its VPDES permit issued by the Board.

9.1. Disclaimer. Nothing in this Agreement shall be construed as authority for either party to make commitments which will bind the other party beyond the covenants contained herein.

9.2 Non-Waiver. No waiver by the Director of any one or more defaults by the Grantee in the performance of any provision of this Agreement shall operate or be construed as a waiver of any future default or defaults of whatever character.

9.3. Integration and Modification. This Agreement constitutes the entire Agreement between the Grantee and the Director. No alteration, amendment or modification of the provisions of this Agreement shall be effective unless reduced to writing, signed by both the parties and attached hereto. The Department and the Grantee shall confer within six months after each reissuance of the Grantee's VPDES permit for the purpose of determining whether this Agreement should be modified or terminated. This Agreement may be modified by agreement of the parties for any purpose, provided that any significant modification to this Agreement must be preceded by public notice of such modification.

9.4. Collateral Agreements. Where there exists any inconsistency between this Agreement and other provisions of collateral contractual agreements which are made a part of this Agreement by reference, the provisions of this Agreement shall control.

9.5. Non-Discrimination. In the performance of this Agreement, the Grantee warrants that it will not discriminate against any employee, or other person, on account of race, color, sex, religious creed, ancestry, age, national origin or other non-job related factors. The Grantee agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

9.6. Conflict of Interest. The Grantee warrants that it has fully complied with the Virginia Conflict of Interest Act as it may apply to this Agreement.

9.7. Applicable Laws. This Agreement shall be governed in all respects whether as to validity, construction, capacity, performance or otherwise, by the laws of the Commonwealth of Virginia. The Grantee further agrees to comply with all laws and regulations applicable to the Grantee's performance of its obligations pursuant to this Agreement.

9.8. Records Availability. The Grantee agrees to maintain complete and accurate books and records of the Project Costs, and further, to retain all books, records, and other documents relative to this Agreement for three (3) years after final payment. The Department, its authorized agents, and/or State auditors will have full access to and the right to examine any of said materials during said period. Additionally, the Department and/or its representatives will have the right to access work sites during normal business hours, after reasonable notice to the Grantee, for the purpose of ensuring that the provisions of this Agreement are properly carried out.

9.9. Severability. Each paragraph and provision of this Agreement is severable from the entire Agreement; and if any provision is declared invalid, the remaining provisions shall nevertheless remain in effect.

9.10. Notices. All notices given hereunder shall be in writing and shall be sent by United States certified mail, return receipt requested, postage prepaid, and shall be deemed to have been received at the earliest of: (a) the date of actual receipt of such notice by the addressee, (b) the date of the actual delivery of the notice to the address of the addressee set forth below, or (c) five (5) days after the sender deposits it in the mail properly addressed. All notices required or permitted to be served upon either party hereunder shall be directed to:

Department: Virginia Department of Environmental Quality
Chesapeake Bay Program
P.O. Box 1105
Richmond, VA 23218
Attn: WQIF Program Manager

Grantee: Fauquier County Water and Sanitation Authority
Vint Hill Farms
7172 Kennedy Road
Warrenton, Virginia 20187
Attn: Chief Financial Officer

9.11. Successors and Assigns Bound. This Agreement shall extend to and be binding upon the parties hereto, and their respective legal representatives, successors and assigns.

9.12. Exhibits. All exhibits to this Agreement are incorporated herein by reference.

9.13. Termination. This Agreement shall terminate 20 years after the Agreement is executed by both parties or by an earlier date by agreement of the parties; provided, however, that except for termination for cause due to Material Breach, the Director's obligation under Section 4.1 herein to pay the Grant amount shall survive termination if such amount has not been paid in full as of the termination date.

ARTICLE X **COUNTERPARTS**

10. This Agreement may be executed in any number of Counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

ARTICLE XI **NUTRIENT CREDITS TO BE MADE AVAILABLE FOR EXCHANGE**

11. To aid in implementing the Nutrient Credit Exchange Program, the Grantee shall make all Point Source Nitrogen and Phosphorus Credits generated in a calendar year available for nutrient allocation compliance. "Point Source Nitrogen Credit" and "Point Source Phosphorus Credit" shall have the meaning as defined in Virginia Code §62.1-44.19:13. The amount of Credits and facilities authorized to generate Credits shall be governed by the Watershed General Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading (9 VAC 25-820). The Department shall control Credits not otherwise used by the Grantee for waste load allocations or compliance purposes and will make such Credits reasonably available to other dischargers for nutrient allocation compliance through the Water Quality Improvement Fund. For purposes of this Agreement, "used by the Grantee" shall include any use whereby the Credits are applied to any compliance obligation of the Grantee, included within an individual compliance plan or basin-level compliance plan of the Virginia Nutrient Credit Exchange Association, or traded to and used by the owner or operator of another facility for nutrient allocation compliance.

WITNESS the following signatures, all duly authorized.

DIRECTOR OF THE DEPARTMENT OF ENVIRONMENTAL QUALITY

By: _____

Date: _____

GRANTEE'S AUTHORIZED REPRESENTATIVE

By: _____

Date: _____

EXHIBIT A

PROJECT DESCRIPTION

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

The original Vint Hill wastewater treatment facility (WWTF), taken over by the Fauquier County Water and Sanitation Authority (FCWSA) from the Federal government, was a trickling filter process with a design flow of 0.246 MGD not designed for nutrient removal. The process consisted of primary clarification, a single trickling filter unit followed by clarification, ultraviolet disinfection and discharge to South Run. The waste solids were anaerobically digested and dried on sand beds prior to disposal.

Under the proposal submitted for nutrient reduction cost share, FCWSA has upgraded the Vint Hill WWTF to add State of the Art Nutrient Reduction Technology (NRT). In addition, the design flow was expanded to 0.60 MGD. The expansion component was necessary to treat wastewater flow generated as a result of redevelopment of the former Federal facility (Vint Hill Army Base) and also due to the removal of three privately owned wastewater treatment facilities from service, as envisioned in the Occoquan Watershed Policy.

The upgraded/expanded wastewater plant consists of an entirely new headworks with grit and grease removal, dual 300,000 gallon Sequencing Batch Reactors (SBRs), alum addition for phosphorus removal, methanol addition as a supplemental carbon source for denitrification, tertiary denitrification filters, cascade post-aeration and ultraviolet (UV) disinfection. Two new aerobic digesters and a belt filter press comprise the solids dewatering system. Associated solids handling equipment (pumps, conveyor and building) were also constructed. The outfall was relocated and the new facility will discharge to Kettle Run.

The upgrade and expansion included the following components:

- Installation of new influent and effluent pumping stations and relocated discharge to Kettle Run (not grant eligible).
- Installation of new headworks [screening and grit removal] (not grant eligible).
- Installation of two Sequencing Batch Reactors and combined post-equalization structure (partially grant eligible).
- Installation of a coagulant [alum] feed system for phosphorous removal (grant eligible).
- Construction of a methanol feed facility system to provide a supplemental carbon source (grant eligible).
- Installation of 6-module Parksen-DynaSand tertiary denitrification filters (partially grant eligible).
- Installation of cascade-type effluent post-aeration (not grant eligible).
- Installation of two new aerobic digesters and belt filter press dewatering (partially grant eligible).
- Installation of non-potable water [NPW] system, UV disinfection process, effluent flow monitoring and sampling (not grant eligible).

EXHIBIT B

PROJECT BUDGET

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

The following budget reflects the estimated costs associated with eligible components of the Project.

Notes: (1) See next page for details about costs attributable to Nutrient Removal Technology.

PROJECT COMPONENT	PROJECT COSTS	% ELIGIBLE	ELIGIBLE PROJECT COST	NOTES*
New Baltimore Influent Pump Station	\$367,923	0%	\$0	1
Headworks	\$377,665	0%	\$0	1
SBR Structure	\$1,847,294	40.00%	\$738,918	2
SBR Process Equipment	\$682,000	75.00%	\$511,500	3
Solids Handling and Dewatering	\$553,250	30.00%	\$165,975	4
Alum Storage and Feed System	\$79,200	100%	\$79,200	3
Hypochlorite Storage and Feed System	\$75,500	100%	\$75,500	3
Methanol Storage and Feed System	\$76,500	100%	\$76,500	3
Modify Blower Bldg & Chlorine Contact Tank	\$83,175	0%	\$0	1
Effluent Pump Station	\$310,056	0%	\$0	1
UV Equipment	\$162,250	0%	\$0	1
Tertiary Denitrification Filtration	\$284,000	60.00%	\$284,000	3
Construction Subtotal	\$4,898,813		\$1,931,593	
Mobilization & Site Administration	\$429,564	39.43%	\$169,377	5
General Site Conditions	\$773,773	39.43%	\$305,099	5
Nonspecific Yard Piping	\$960,000	39.43%	\$378,528	5
Paving and Painting	\$190,000	39.43%	\$74,917	5
Electrical	\$952,000	39.43%	\$375,374	5
General Contracting Subtotal	\$3,305,337		\$1,303,294	
Construction Total	\$8,204,150		\$3,234,887	
Change Order Totals	- \$98,578		- \$3,827	6
Final Construction Total (with change orders)	\$8,105,572		\$3,231,060	
Basic Engineering Totals	\$587,942	25.40%	\$149,333	7
Construction Management Total	\$128,085	39.43%	\$50,504	5
Total Project Cost	\$8,821,599		\$3,430,897	
Grant Percentage			x 60%	
Grant Amount			\$2,058,538	

NOTES: * see next page for details about costs attributable to Nutrient Removal Technology.

EXHIBIT B

PROJECT BUDGET

(continued)

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

Notes on costs attributable to Nutrient Removal Technology (NRT):

1. Not considered to be NRT.
2. SBR cost share is based on best professional judgment of the cycle time associated with anoxic/anaerobic conditions to achieve denitrification and settling, per DEQ Guidance Memorandum (GM) #06-2012
3. Eligible percentage for the unit process, as determined by DEQ GM #06-2012.
4. Eligibility for solids handling and dewatering is based on the estimated solids generated by enhanced nutrient reduction technology compared to a conventional secondary wastewater treatment process.
5. The eligible percentage represents the construction costs associated with NRT divided by the total construction cost.
6. This net reduction was the result of ten change orders, each weighted for the appropriate eligible cost and cost share percentage.
7. The eligible percentage represents the construction costs associated with NRT, divided by the total construction cost times those basic engineering service items (through Addendum #2) which were considered grant eligible.

EXHIBIT C

PROJECT SCHEDULE

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

The Grantee has proposed the following schedule of key activities/milestones as a planning tool which may be subject to change. In particular, the Grantee acknowledges that the appropriate approval (Certificate to Construct) must be issued by the Department prior to proceeding with construction. Unless authorized by a grant modification, it is the responsibility of the Grantee to adhere to the anticipated schedule for the project as follows:

Activity	Date/Duration
a. Submit letter of substantial completion	On or before Oct., 31, 2007
b. Complete Final Construction	On or before Dec. 31, 2007
c. Initiate monitoring in accordance with article VII	On or before Jan. 1, 2008

EXHIBIT D

REQUISITION FOR REIMBURSEMENT

(To be on Grantee's Letterhead)

Department of Environmental Quality
Chesapeake Bay Program
P.O. Box 1105
Richmond, VA 23218
Attn.: WQIF Program Manager

RE: **Virginia Water Quality Improvement Fund Grant**
Contract #440-S-08-12

Dear Program Manager:

This requisition, Number _____, is submitted in connection with the referenced Grant Agreement, dated as of *[insert date of grant agreement]* between the Director of the Virginia Department of Environmental Quality and _____. Unless otherwise defined in this requisition, all capitalized terms used herein shall have the meaning set forth in Article I of the Grant Agreement. The undersigned Authorized Representative of the Grantee hereby requests disbursement of grant proceeds under the Grant Agreement in the amount of \$_____, for the purposes of payment of the Project Costs as set forth on Schedule I attached hereto.

Copies of invoices relating to the items for which payment is requested are attached.

The undersigned certifies that the amounts requested by this requisition will be applied solely and exclusively to the reimbursement of the Grantee for the payment of Project Costs.

This requisition includes (if applicable) an accompanying Certificate of the Project Engineer as to the performance of the work.

Sincerely,

(Authorized Representative of the Grantee)

Attachments

C. DEQ-Regional CAP Engineer

SCHEDULE 1
VIRGINIA WATER QUALITY IMPROVEMENT FUND
FORM TO ACCOMPANY REQUEST FOR REIMBURSEMENT

REQUISITION # _____

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

CERTIFYING SIGNATURE: _____

TITLE: _____

Cost Category	Total Project Budget	Eligible Project Costs	WQIF Grant Amount	Previous Grant Disbursement	Grant Disbursement This Period	Remaining Balance
Engineering Design	\$587,942	\$149,333	\$89,600	\$0	\$0	
WWTP Construction	\$8,105,572	\$3,231,060	\$1,938,636	\$0	\$0	
Construction Management	\$128,085	\$50,504	\$30,302	\$0	\$0	
TOTALS:	\$8,821,599	\$3,430,897	\$2,058,538	\$0	\$0	

Total Grant Amount \$ 2,058,538
Previous Disbursements \$ _____
This Request \$ _____
Grant Proceeds Remaining \$ _____

CERTIFICATE OF THE PROJECT ENGINEER
FORM TO ACCOMPANY REQUEST FOR REIMBURSEMENT

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

This Certificate is submitted in connection with Requisition Number _____, dated _____, 20____, submitted by the _____ (the "Grantee") to the Virginia Department of Environmental Quality. Capitalized terms used herein shall have the same meanings set forth in Article I of the Grant Agreement referred to in the Requisition.

The undersigned Project Engineer for _____ hereby certifies that insofar as the amounts covered by this Requisition include payments for labor or to contractors, builders or material men, such work was actually performed or such materials, supplies, or equipment were actually furnished to or installed in the Project.

(Project Engineer)

(Date)

EXHIBIT E

REPORTING OF ANALYTICAL RESULTS

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

Year: _____

MONTH	PARAMETER	CONCENTRATION (monthly average)	UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
January	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
February	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
March	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
April	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
May	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
June	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
July	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
August	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
September	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
October	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
November	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
December	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		
Annual Average	Total Nitrogen		mg/l		
	Total Phosphorus		mg/l		

EXHIBIT E

REPORTING OF ANALYTICAL RESULTS

(continued)

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

Data Excluded Due to the Occurrence of Extraordinary Conditions: (if applicable; attach explanation)

Date(s): _____

Operator Responsible for Samples: _____ Date: _____

Telephone: _____ Certificate Number: _____

EXHIBIT F

FORMULA FOR CALCULATING MONETARY ASSESSMENT FOR EXCEEDANCE OF NUMERICAL NITROGEN CONCENTRATIONS

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

Section 1: Nitrogen Exceedances

$$CN = (TNe/TNr) \times AnPay \times PerGrant$$

where:

CN	=	Assessment for Nitrogen Exceedance.
TNe	=	Exceedance in tenths of a milligram per liter.
TNr	=	Expected nitrogen removal (difference between "pre-nutrient removal" annual average concentration and 3.0 mg/l limitation) in tenths of a milligram per liter.
AnPay	=	Annual Payment on grant; assumes principal payments amortized over 20 years and an interest rate of 5 percent. Using these assumed values leads to a "cost recovery factor" of 0.0802. The "cost recovery factor" times the grant amount yields the Annual Payment amount.
PerGrant	=	Percentage of grant received by year of exceedance.

Values used for Grant #440-S-08-12:

Pre-Nutrient Removal TN Concentration	=	15.8 mg/l
Effluent TN Concentration Limitation	=	3.0 mg/l
Total Grant Amount for TN Removal	=	\$1,338,581
Useful Service Life	=	20 years
Interest Rate	=	5 percent

Calculated (assumes grant paid 100%):

Expected Removal (TNr)	=	12.8 mg/l
AnPay	=	\$107,400
CN	=	\$840 (for each 0.1 mg/l TN exceedance)

EXHIBIT F

FORMULA FOR CALCULATING MONETARY ASSESSMENT FOR EXCEEDANCE OF NUMERICAL PHOSPHORUS CONCENTRATIONS

Grantee: Fauquier County Water and Sanitation Authority

Grant: #440-S-08-12

Section 2: Phosphorus Exceedances

$$CP = (TPe/TPr) \times AnPay \times PerGrant$$

where:

CP	=	Assessment for Phosphorus Exceedance.
TPe	=	Exceedance in tenths of a milligram per liter.
TPr	=	Expected phosphorus removal (difference between "pre-nutrient removal" annual average concentration and 0.03 mg/l limitation) in tenths of a milligram per liter.
AnPay	=	Annual Payment on grant; assumes principal payments amortized over 20 years and an interest rate of 5 percent. Using these assumed values leads to a "cost recovery factor" of 0.0802. The "cost recovery factor" times the grant amount yields the Annual Payment amount.
PerGrant	=	Percentage of grant received by year of exceedance.

Values used for Grant #440-S-08-12:

Pre-Nutrient Removal TP Concentration	= 2.08 mg/l
Effluent TP Concentration Limitation	= 0.30 mg/l
Total Grant Amount for TP Removal	= \$719,957
Useful Service Life	= 20 years
Interest Rate	= 5 percent

Calculated (assumes grant paid 100%):

Expected Removal (TPr)	= 1.78 mg/l
AnPay	= \$57,740
CP	= \$3,250 (for each 0.1 mg/l TP exceedance)

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Fauquier County, Virginia.

PUBLIC COMMENT PERIOD: May 21, 2014 to June 20, 2014

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Fauquier County Water and Sanitation Authority, 7000 Kennedy Rd, Warrenton, VA 20187, VA0020460

PROJECT DESCRIPTION: Fauquier County Water and Sanitation Authority has applied for a reissuance of a permit for the public Vint Hill WWTP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.95 million gallons per day into a water body. The sludge will be disposed by landfill or sent to the Remington WWTP for further treatment and land application. The facility proposes to release the treated sewage in Kettle Run in Fauquier County in the Potomac watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, Total Suspended Solids, Dissolved Oxygen, *E. coli*, Ammonia as N, Total Nitrogen, and Total Phosphorus.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Alison Thompson

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov Fax: (703) 583-3821